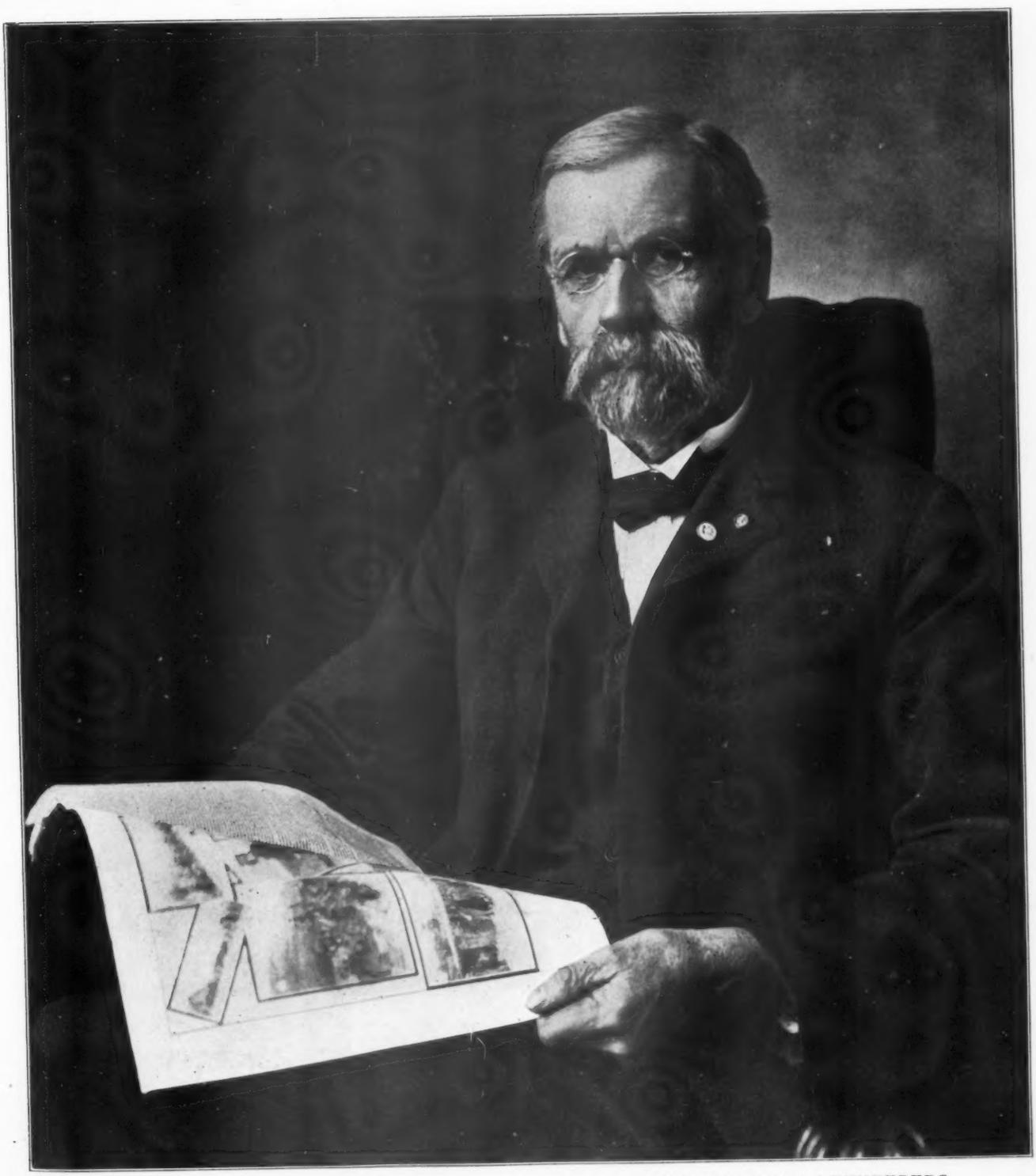
AMERICAN BEE JOURNAL

JULY, 1919



EUGENE SECOR, WHOSE DEATH IS WIDELY MOURNED AMONG AMERICAN BEEKEEPERS

Here's a Reproduction of Muth's New Home in Cincinnati

Anticipating the wants of the trade, and to meet the demands of our customers, we are now located at Pearl and Walnut Streets, carrying tremendous stocks—making this the largest Honey House in the country.

WHY YOU SHOULD BUY NOW! We advise you to buy your bee supplies now. You not only get the benefit of favorable market conditions, but you are assured of immediate delivery. There will be no disappointment if you send your order for bee supplies to MUTH NOW.

MUTH'S ADVANTAGES! We sell at factory prices, *save* you freight and give you the finest bee supplies manufactured. Our new 1919 catalogue sent for the mere asking. Drop us a card now.

LEWIS' BEEWARE **DADANT'S FOUNDATION**

ROOT'S SMOKERS, EXTRACTORS, ETC.

OLD COMBS AND CAPPINGS
Send them to us for rendering. We pay you the highest market price for Beeswax, and charge you but 5c per pound for the wax rendered. It pays to send us your old combs and cappings.

WANTED—COMB HONEY
Comb and Extracted Honey find ready sales here. Tell us what you have. We buy Beeswax at high prices. Always glad to reply to inquiries.

We will appreciate a visit from you. When in the city, come and see us.

THE FRED W. MUTH CO. **Pearl and Walnut Streets CINCINNATI OHIO**

"THE BUSY BEEMEN"

Four Bee Books

YOU SHOULD HAVE

IN YOUR LIBRARY

First Lessons in Beekeeping

By C. P. DADANT

A 175-page beginner's book, well illustrated and cloth bound.

Price $1
Mailing weight, one pound

A Thousand Answers to Beekeeping Questions

By C. C. MILLER

Supplements other books by answering questions not usually taken up. Cloth bound; 290 pages.

Price $1.25
Mailing weight, two pounds

Practical Queen-Rearing

By FRANK C. PELLETT

Gives all the modern queen-rearing methods, simply. A good book for both the scientific queen-breeder and the amateur. Cloth bound; 110 pages; illustrated.

Price $1
Mailing weight, one pound

Langstroth on the Honey Bee

Revised by
C. P. DADANT

"The Classic in Bee Culture"

A full treatise on beekeeping. Cloth; 575 pages.

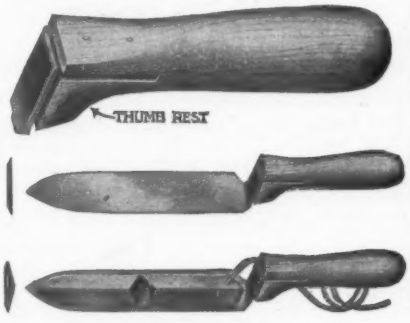
Price $1.50
Mailing weight, three pounds

ALL FOR SALE BY

AMERICAN BEE JOURNAL
HAMILTON, ILLINOIS

NEW BINGHAM BEE SMOKER

The Bingham Bee Smoker has been on the market over forty years and is the standard in this and many foreign countries. It is the all important tool of the most extensive honey producers of the world. It is made in four sizes and has a leather bellows.



The Genuine Bingham Honey Uncapping Knife is manufactured by us here at Grand Rapids, and is made of the finest quality steel. These thin-bladed knives, as furnished by Mr. Bingham, gave the best of satisfaction, as the old-timers will remember. Our Perfect Grip Cold Handle is one of the improvements.

The Woodman Section Fixer, a combined section press and foundation fastener, of pressed steel construction, forms comb-honey sections and puts in top and bottom foundation starters, all at one handling. It is the finest equipment for this work on the market.

The above specialties can be secured from us direct by post, or from practically all dealers and manufacturers of supplies, with the exception of the Root Company, and agencies. Our 1919 illustrated catalog and special circulars will be mailed on request.

TIN HONEY PACKAGES

2 lb. Friction Top Cans in cases of 24. 5-lb. Friction Top Pails in cases of 12.
2 lb. Friction Top Cans in crates of 612 5-lb. Friction Top Pails in crates of 100.
2½-lb. Friction Top Cans in cases of 24. 5-lb. Friction Top Pails in crates of 203.
2½-lb. Friction Top Cans in crates of 450. 10-lb. Friction Top Pails in cases of 6.
10-lb. Friction Top Pails in crates of 113.

Write for prices on Friction Top Cans and Pails and 60 pound Cans, giving quantity wanted.

A. G. WOODMAN CO.
GRAND RAPIDS, MICH., U. S. A.

"falcon" **BEE SUPPLIES** "falcon"

HIVES, SUPERS, FRAMES, SECTIONS, FOUNDATION
In fact anything in the line of Bee Supplies

Have you ordered your supplies yet for the season of 1919 which is now with us, or are you waiting for the last moment to come around when the supplies now carried in stock will be nearly exhausted, or the shipping department so busy that they will not be able to give you the quick service which you naturally expect? Just stop and think what would happen if all beekeepers would do this. To relieve the situation and to help conditions in general, get your order in at once.
We are prepared to make immediate shipments from our large warehouses, which were packed to the brim before the season started.
You all know what the **"Falcon"** line is, and you ought to know what the **"Falcon"** service is. If you never ordered from us before, better let us have the next order to convince you not only for once, but forever.

Send for the Red Catalog and "Simplified Beekeeping"

W. T. FALCONER MANUFACTURING CO., Falconer, New York
Where the Best Beehives Come From

SUPERIOR FOUNDATION EXCELS
READ THE FOLLOWING

Superior Honey Co.,
Ogden, Utah.

Cushman, Ore., June 8, 1919.

Dear Sirs:

Your Foundation arrived O. K. I gave some of it and some of the other make (in full sheets) to a natural swarm. In three days the bees had Superior Foundation nearly full drawn, and some of the cells at top of frames were two-thirds full of honey, while the other foundation was not over half drawn out. The other foundation was purchased this spring. I surely would ask for no better article than **SUPERIOR FOUNDATION,** as it is a first-class article. Shall use some more in the next natural swarm and report further results.

Yours respectfully,

L. W. DERRIN.

Our machines are running to full capacity. We guarantee prompt shipments.

SUPERIOR HONEY CO., Ogden, Utah
(Manufacturers of Weed Process Foundation)

The Diamond Match Co.
(APIARY DEPT.)

MANUFACTURERS OF
Beekeepers' Supplies
CHICO, CAL., U. S. A.

Dadant's incomparable Foundation is always kept in stock. Western Beekeepers can be supplied advantageously.

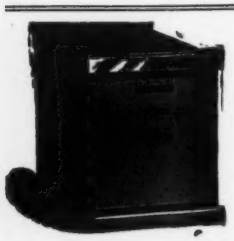
BEEKEEPERS, wherever they may be located, before deciding where to obtain supplies, should write to The Diamond Match Co. for prices, and for their Beekeepers' Supply Catalogue.

This Company are the largest manufacturers in the world who make Bee Supplies. They own their own timber lands, mills and factories, and supply goods direct from the tree to the beekeeper.

Full advantage of this low cost of production is given to the purchaser.

The Apiary Department (which is in charge of experienced supply men, who are also practical beekeepers) maintains a constant excellence of product and offers unsurpassed service.

The Diamond Match Co.
Apiary Department **CHICO, CAL., U. S. A.**



EARLY ORDER DISCOUNTS WILL
Pay You to Buy Bee-Supplies Now

Thirty years' experience in making everything for the beekeeper. A large factory specially equipped for the purpose ensures goods of highest quality. Write for our illustrated catalog today.

LEAHY MFG. CO., 90 Sixth St., Higginsville, Mo.
or J. W. ROUSE, Mexico, Mo.

MOTT'S NORTHERN-BRED ITALIAN QUEENS

that resist disease well, therefore must be hardy, prolific, and hustlers; they are gentle. Untested, $1 each, 6 for $5.50, 12 for $10. Select tested, $2 each. Plans, "How to Introduce Queens" and "Increase," 25c.

E. E. MOTT, Glenwood, Mich.

DADANT SPECIALTIES

DADANT'S FOUNDATION World renowned for its excellence. Put to actual tests in our own apiaries of several hundred colonies. Every inch equal to sample in every respect. Acknowledged by hundreds of users to be the most readily drawn out by the bees, and therefore a saving to use under any circumstances

ELECTRIC IMBEDDER Melts the wires into the Foundation as if they had grown there. Requires only two dry cells to operate, or can be used on city current by use of a transformer which we furnish or which can be made at home. Full directions with each machine.

BEE BOOKS **First Lessons in Beekeeping,** by C. P. Dadant, is a thorough book for the beginner, while **The Honeybee,** by Langstroth and Dadant, is considered the classic in Bee Culture. **A Thousand Answers to Bee Keeping Questions,** by Dr. C. C. Miller, is a compilation of over 1,000 questions answered by Doctor Miller in his 60 years of beekeeping; for veteran and amateur alike. **Practical Queen-Rearing,** by Frank C. Pellett, gives the improved methods of rearing queens, with variations suitable for the home yard.

AMERICAN BEE JOURNAL A monthly publication of 36 pages foremost in its field for the advancement of beekeeping. Contributors from all sections and all countries. The result of painstaking efforts and long experience of its editors, C. P. Dadant and Frank C. Pellett.

HONEY LABELS Distinctive designs, up-to-the-minute. We have just issued a label catalog with samples of stationery designed especially for the beekeeper. Write for your copy. All kinds of labels to fit all styles of packages. Attractive honey sellers.

Read Our Catalog for Further Particulars

DADANT & SONS
HAMILTON, ILLINOIS

A HURRY UP ORDER

Has the honey flow found you short of supplies? Have the bees exceeded your expectations? Do you need more supplies to harvest your 1919 crop? Then take your problem to a Lewis distributor. Wherever you are a Lewis distributor is near you. Lewis Beeware can be rushed to you "post haste." Then beside the Beeware Brand you get Lewis Service.

OUR GUARANTEE

Every article is guaranteed. Your money back if you are not satisfied. If you purchase goods from one of our distributors, this same guarantee holds good, as we stand back of our product.

WE WANT YOU TO SUCCEED

The G. B. Lewis Company welcomes the opportunity to offer you expert advice. Address inquiries to the company for the attention of "Bee Specialist." A "Pocket Library" of beekeeping booklets ready for distribution at a cost of five cents each is listed below.

"How to Start Beekeeping"
"How to Manage Bees"
"How to Prevent Swarming"
"How to Buy Queens"
"How to Feed Bees"
"How to Transfer Bees"
"How to Care for Nuclei"
"How to Unite Bees"
"How to Locate an Apiary"

Send for a Lewis Beeware Catalog
It is Free

G. B. LEWIS CO. BEWARE WHERE YOU BUY YOUR BEEWARE LEWIS WATERTOWN WIS U.S.A. MAKES THE FINEST **Watertown, Wis.**

LOOK FOR THE BEEWARE BRAND

AMERICAN BEE JOURNAL

VOL. LIX—NO. 7 HAMILTON, ILL., JULY, 1919 MONTHLY, $1.00 A YEAR

SOME OBSERVATIONS ON NOSEMA-DISEASE

By G. F. White, Bureau of Entomology, Washington, D. C.

NOSEMA-DISEASE, in many ways, is one of the most interesting of the diseases of adult bees. Doubtless the beekeeper already is quite familiar in a general way with the nature of the disorder since the bee journals have carefully presented the facts concerning the disease as they have been determined. Since 1910 the writer has been making some studies on the disease, and in the present communication there are discussed briefly some of the more important observations obtained which would seem to be of interest to all beekeepers. In a bulletin* (No. 780) recently issued by the United States Department of Agriculture, the writer has given in some detail the results obtained which have a more or less direct connection with the problems with which the practical apiarist is confronted. No direct work on the treatment of the disease was undertaken. In planning the investigations, however, the problems selected were of such a nature that the results obtained from them could be used by the beekeepers in devising methods for treatment.

Nosema-disease Not a New Disorder

The disorder now known as Nosema-disease was reported by an European observer as early as 1857. That such a disease of bees exists was afterward almost forgotten until the fact was again brought to the attention of beekeepers in 1909. The disease is present at least in Australia, Switzerland, Germany, Denmark, England, Canada and the United States, and has been reported from Brazil, also. Most likely it has a much wider distribution, even, than this. The writer found Nosema infection in bees received from 27 different States in the United States.* These were from the North, the South, the East and the West. The disease is, therefore, very widely distributed in America and is not a new one to cause losses to apiaries. The information regarding the disease is of recent origin, but not the disease itself. It is better to think of the disorder as one which has been collecting toll from apiaries longer than bees have been kept in America, and probably longer than bees have been kept anywhere by man.

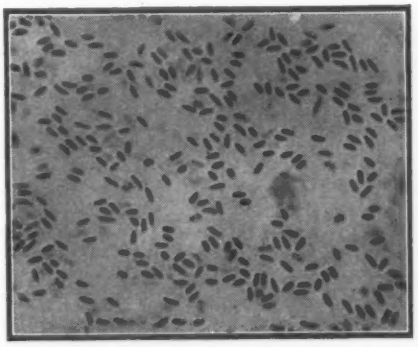


Fig. 1.—Photomicrograph of *Nosema Apis.*

Fig. 2.—Stomachs removed from Nosema-diseased bees. Beginning at top the picture shows the tip of the abdomen, large intestine and small intestine. The proventriculus and honey sac are to be seen with the middle one of the three.

Germ Causing Nosema-disease

The germ that causes Nosema-disease is a protozoan, a one-celled animal parasite. **Nosema apis** is the name which has been given to it. The parasite has a growing (vegetation) form and a spore (resting) form. To the apiarist the spore form is the more important. The spores are small oval bodies (fig 1) which, if placed end to end would require 5,000 to measure an inch, and if placed side by side would require 10,000 to measure this distance. These spores are taken into the stomach (fig. 2) by the adult bee, with the food or water. The digestive juices acting on the covering of the spore release the young parasite. These young forms immediately find their way to the wall (fig. 3) of the stomach and invade it. Once within the wall of the organ they grow rapidly and multiply to an enormous extent (figs. 3, 4, 5 and 6). Spores are then produced in large numbers and are shed into the stomach and, being mixed with the partially digested food (fig. 3), are carried through the remainder of the intestinal tract, to be voided with the excrement. Should such excrement reach the food or water supply of bees it will be seen how other bees might thus become diseased..

Name of the Disease

Since Nosema-disease has affected apiaries as much in the past as at present, it is of interest to know the name used, by beekeepers, for the condition to which the losses due to it are attributed. Early during the writer's studies, it was observed that the highest percentage of Nosema-infected bees were present in weak

* Bulletin No. 780 was written primarily for beekeepers. Strictly technical discussions were purposely avoided in preparing it. While it contains some semi-technical terms, it is believed these will offer no particular obstacle to a satisfactory understanding of the subject matter presented.

* Bulletin No. 92, U. S. Department of Agriculture, May 15, 1914.

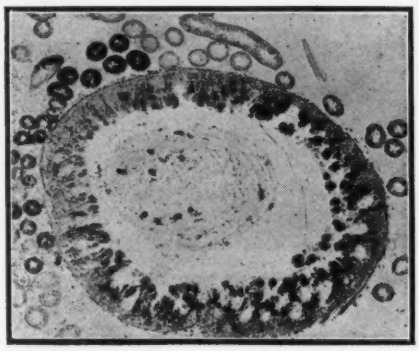


Fig. 3.—A magnified cross-section of a stomach shown in Fig. 2. The germs are stained black. Note that some of the germs have been shed into the stomach and are mixed with its contents.

colonies. This fact led to the request made of beekeepers, in different sections of the country for adult bees from weak colonies. Out of about 150 samples received in reply, fully one-half of them contained Nosema-infected bees. Nine well-informed beekeepers, among those sending samples, were asked concerning the name by which the disease condition was known to them. Of these 3 replied "spring dwindling", 2 "not spring dwindling", 2 said "weak colonies," and 1 wrote, "I don't know."

Bees from spring dwindling colonies were requested also from beekeepers. Out of 38 samples received, only 15 contained Nosema-infected bees. In reply to requests for bees from hives in which colonies had died during the winter, 19 samples were received and 7 of them contained Nosema-infected bees. Out of 5 samples taken from colonies which beekeepers had diagnosed as suffering from paralysis, no bees were found infected.

From these facts it will be observed that no one name was being used, by American beekeepers, for the condition to which the losses due to Nosema-disease were attributed. Some, it will be seen, referred to the condition as spring dwindling, but others did not. That the disease contributes in part to winter losses is quite evident. It is an interesting fact that neither paralysis nor dysentery was suggested, by beekeepers, for the condition in colonies in which Nosema-infected bees were present in large numbers.

When Zander reported his observations, in 1909, he used the name "infectious dysentery." This name was misleading, and fortunately he soon afterward introduced another one, which is more appropriate. As the common name for the disease, in English, the writer has suggested the term "Nosema-disease." This is simply a translation of the more appropriate name given to it by Zander.

That the following names have been used, in one or more countries and from time to time, for the disorder that is produced by **Nosema apis,** is very probable: Dysentery, paralysis, palsy, spring dwindling, dropsy, disappearing trick and Isle of Wight disease. To this list the beekeeper, most likely, could add many more. It is not at all probable, however, that any one of these had been used exclusively for the disorder now known as Nosema-disease. Whether the diseases of adult bees are few or many is not definitely known, but it seems probable that they are fewer than are the names which have been used for them. Practical beekeepers have made some interesting observations, on the adult bee diseases, but it must be admitted that very little of a definite character has yet been obtained, from an experimental and laboratory study of these diseases, excepting Nosema-disease.

A word should be said in regard to Isle of Wight disease, in order to allay any possible uneasiness which might be felt in America regarding it. The writer has not encountered, during his studies, any condition which causes the losses which have been attributed to Isle of Wight disease in England. Certainly Nosema-disease does not cause such losses in America. Since the Isle of Wight disease does not seem to be in America, fear by American beekeepers is scarcely justifiable at the present time. Students of the disease in Great Britain no doubt will supply, in due time, as a result of their investigations, the information on the disease which is wanting.

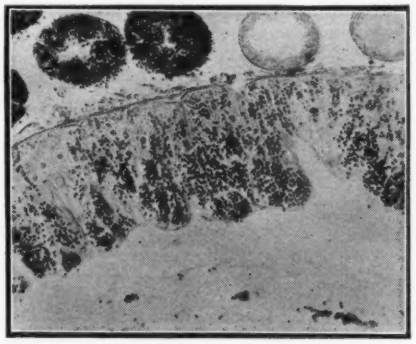


Fig. 4.—A portion of Fig. 3 more highly magnified.

Beekeepers will recall the technical name, "Microsporidiosis," which has been used for the disease caused by **Nosema apis.** This name was chosen because **Nosema apis** belongs to a group of protozoa "Microsporidia." While the name is appropriate, some criticism has been offered by beekeepers, because of its length and because it is not readily understood. By way of explanation of the term, it might be said that the term "nosemosis" could have been coined and used as the technical name in much the same way. The origin of the latter term will be readily recognized.

The Experimental Apiary

Much concerning the nature of Nosema-disease has been learned by observing it in the experimental apiary. The space occupied by the apiary (fig. 7) was broken up by small trees. In arranging the hives, uniformity as to their relation to each other was intentionally avoided. A nucleus which could be accommodated comfortably on from 4 to 6 brood-frames was found to serve well the purposes of an experimental colony. The entrance to the hive (fig. 8) was closed except a small space on the side occupied by the frames with wire cloth. Shallow dishes placed on the bottom-board on the side occupied by the brood-frames were used as feeders.

At the beginning of the experiments all of the colonies of the apiary were free, or practically free, from Nosema infection. In making the inoculations the experimental colonies were fed about one half pint of sugar syrup, to which had been added the crushed stomach of Nosema-diseased bees. These colonies were left in the apiary and were not confined, but were allowed to enjoy the same freedom after the inoculation as before.

How to Examine Bees for Nosema-disease

Upon examining a large number of young bees it was observed that among them there were practically no Nosema-diseased ones. The same was found to be true of the very old bees. In making the examination, therefore, for Nosema-disease in colonies, bees that were neither very young nor very old were selected. As drones are not likely to be found infected, except in experimental colonies recently inoculated, they were not chosen in making the examinations. As the brood does not become infected, it cannot be used.

The younger bees may be avoided by selecting field bees and the very oldest ones may be omitted from the samples taken by avoiding those that are shiny. It was found that for most purposes 10 bees make a very satisfactory sample for examination. The bees are taken at the entrance of the hive. Those carrying pollen, if pollen is being brought in, are the ones chosen, as they are readily recognized as field bees. As an individual bee, sick of Nosema-disease, presents no outward evidence of disease, and since only by the changed appearance of the stomach can the disease be diagnosed, the bee must be sacrificed in making the diagnosis. They are caught by the thorax with forceps and by slight pressure are easily killed.

In removing the stomach, the thorax is held between the thumb and index finger of one hand, and with fine-pointed forceps (preferably curved) in the other, the tip of the abdomen

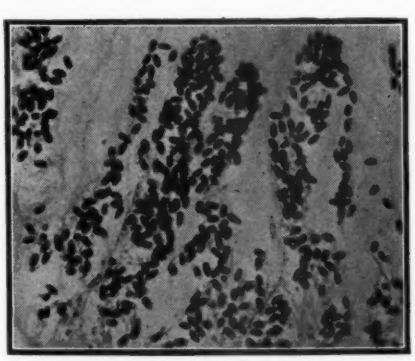


Fig. 5—Shows a still higher magnification than Fig. 4.

is seized. By gentle traction the digestive tract forward to and including the stomach, and occasionally also, the proventriculus and honey sac, may be removed (fig. 2). The largest and usually the last portion to come away by this method is the stomach (ventriculus). This is a relatively thick-walled, elongated and more or less spindle-shaped organ.

The color and size of healthy stomachs are variable. They vary somewhat with the age of the bee and also with the season of the year. The color of the stomach of workers ranges from a light yellowish brown to a deep red, corresponding to the flesh of the ox. Sometimes the appearance of the organ is due, in part, to the presence of pollen in it. The stomach of the drone is smaller and lighter in color than that of the worker. The stomach of the queen is also smaller than that of the worker, but less difference exists, in her case, than in the case of the drone.

The diseased stomach is lighter in color than the healthy one. Late in the course of the disease it is white. The diseased organ not infrequently tears by the traction which is necessary to its removal and is more easily crushed than the healthy one, and when crushed the mass is milky in appearance.

Nosema-disease Weakens Colonies

Since the stomach of a bee (figs. 2, 3, 4, 5 and 6) is very abnormal in Nosema-disease, it is only natural to expect that an affected bee is less efficient as a member of the colony than a healthy one. The results obtained from experiments support this position. It was found that the strength of experimental colonies diminished as a result of Nosema infection, when no brood, or very little of it, was being reared. Furthermore, it was found that by inoculating a colony every 3 or 4 weeks during the more active brood-rearing season, the strength of the colony remains more or less uniform, while colonies in the same apiary which have not been inoculated make the customary gain.

Ten colonies, each of which were easily accommodated on from 6 to 7 brood-frames, were inoculated about the middle of September, 1912. These weakened as a result of the infection that was produced. By the middle of May of the following spring, 5 of them were dead. The 5 that lived through the winter, though weak in the spring, recovered from the infection, gained in strength during the brood season, and by autumn were as strong as the average for the apiary. Colonies inoculated at the beginning of the active brood-rearing season first lose, but later gain in strength, due to the young bees that are produced. Such colonies, however, are not as strong relatively as the uninoculated ones. It is seen, therefore, that Nosema-disease does tend to weaken colonies.

Fig. 7.—Apiary in which the 1915 experiments were conducted.

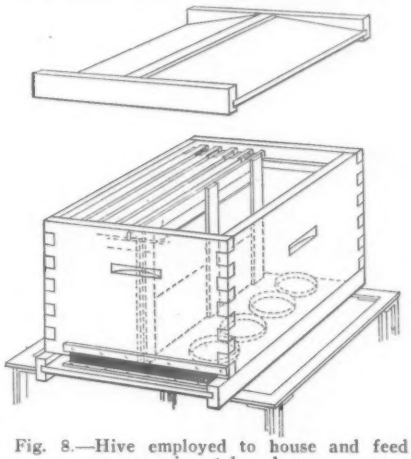


Fig. 8.—Hive employed to house and feed an experimental colony.

Nosema-disease Sometimes Kills Colonies

From what has just been said it might be expected that Nosema-disease, under certain circumstances, may kill colonies. Those which were inoculated in the fall of the year, after the brood-rearing season was over, invariably died somewhat later during the winter.

Not only was the disease studied in colonies in which it had been produced by experimental inoculation, but also in an apiary in which it was contracted through natural means. Such an apiary, located near Washington, D. C., furnished a favorable opportunity for a 3-year observation of the disorder as it occurs in nature. The April count of the apiary in 1912 was 24 colonies.

Of these, 5 died during the bee season and were dead by the end of May. The percentage of Nosema-infected bees, among the field bees of these colonies, ranged from 50 to 100 per cent. Results similar to these were obtained during the remaining two and one-half summers that the studies were being made on the apiary. The facts determined show that Nosema-disease may, and sometimes does, kill colonies.

Colonies Have a Tendency to Recover From Nosema-disease

In order to maintain Nosema infection, in an experimental colony, during the more active bee season, repeated inoculations were necessary. In about 2 weeks after an inoculation feeding, practically all field bees are diseased, but after 1 month very few infected ones are present. The diseased bees die, the young ones emerging are healthy, the infection spreads very little, if any, from the sick bees to the healthy ones, and as a result the colony is comparatively free from infection. It was seen from the experiment referred to above, that 5 out of the 10 colonies inoculated in September wintered, and by the fol-

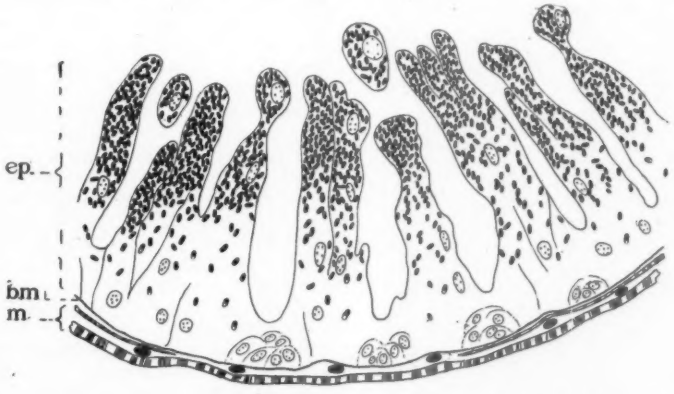


Fig. 6.—Drawing of section of the wall of diseased stomach. The cells lining the stomach which secrete digestive juices and probably also absorb some food substances, are filled with the germs. (Proc. Ent. Soc. Wash. 1918.)

lowing fall equaled in strength the uninoculated colonies of the apiary.

During the studies made in 1912, on the disease occurring in nature, it was found that each of the 19 colonies of the apiary contained some Nosema-infected bees at one time or another. These colonies gained in strength during the summer and contained a smaller percentage of Nosema-infected bees in the fall of the year than in the spring. The percentage of colonies that died during the winter 1912-1913 was less than during the winter 1911-1912. Nosema infection was present in the apiary in 1913, 1914 and 1915, but a relatively fewer number of colonies died during the latter years than in 1912.

It is seen again that while some colonies do die of Nosema-disease, by far the greater number of infected ones do not. The colony, therefore, tends, in a general way, to recover from the disease. In other words, in the case of Nosema-disease the tendency of the colony to recover from the disorder is greater, as a rule, than is the tendency of the disease to destroy the colony.

(Continued in August Number)

The Senses of Bees

By J. E. Crane

DURING the summer of 1918, while inspecting a yard of bees, I incidentally asked the proprietor if he knew where the bees got the wax with which to build their combs. Much to my surprise, I found he had not the slightest idea as to where the wax came from. Later I put the same question to another beekeeper, who was the proud possessor of 100 colonies, and found him no wiser. So I have been wondering if our journals and writers are not taking more space in discussing hives, tools and necessary manipulations to secure the greatest profit, than in the study of the bees themselves, which are among the most interesting creatures with which we have to do. More space in proportion to its importance, I mean.

Suppose we think for a little time on the senses of bees. Have we stopped to think that bees have various senses the same as ourselves, and are guided by them the same as we are? Hearing, seeing, tasting, smelling, and the sense of touch or feeling, and perhaps others. I have placed hearing first, although there are many who still doubt whether bees can hear.

The fact that bees make several distinct sounds would indicate that they are made for a purpose. Those with some experience recognize the sharp, high key of an angry bee. "I no like it when they go zing," said a Frenchman who used to visit one of our yards. Neither do we like it, for we feel instinctively that not only the bee that makes the sound is likely to sting, but others will be attracted by the sound and sail in to drive away the intruder. How many times have we seen a swarm in the air apparently in trouble? We find the queen that has dropped to the earth and place her where the bees had begun to cluster, and, presto! what a change! There is now a joyful sound and the bees flock to the spot where the queen was placed. Almost alw ys, if a swarm has clustered within reach, I take a pint or more of bees and place at the entrance or inside the hive, that they may first find the home they want and call the swarm when shaken in front of it.

What wonderful eyes bees have! Thousands of them covering a large part of the head, and so arranged that they can see in almost every direction at the same time. This is important, as they cannot turn their heads as birds and animals can. How desirable that they take in so large a part of the landscape at once in their search for flowers. Lacking the power to change the focus of their eyes, some of these compound eyes may be adapted to seeing long distances, and others to near-by objects. What an admirable arrangement!

While bees have a keen sense of taste they can hardly be said to be fastidious, for they gather many different kinds of honey; the mild-flavored kinds as well as those that are bitter or rank tasting. This is well, for if they were willing to gather only the choicest grades, they would starve in many places, yet when they can choose, they, as a rule, prefer the finer, mild-flavored kinds. There are well-marked differences in different colonies, some working much better on dark, ill-flavored honey than others. Black bees, as a rule, will gather much more of buckwheat honey than Italians under the same conditions. Some colonies take more readily to gathering honeydew than others, although it is within the reach of all.

The sense of smell in bees is so acute and wonderful that we can hardly comprehend it; their very existence depends upon it. It may even surpass that of a fox or blood-hound. By it bees can recognize their own queen from a stranger. The bees that stand on guard at the entrance of their hive can, by their sense of smell, tell the inmates of their hive as they return from a flight from bees from other hives. Von Butel Reepen believes that bees recognize eight different odors about their hives. But this sense is one of the most important in their search for honey or nectar.

A friend was telling me some time ago how he stored some honey in a spare room on the first floor of his house; after stopping every crack and crevice of doors and windows, he found bees getting into the room, and on watching he found the bees came down the chimney and into the room through an open fireplace. Have we stopped to inquire how the bees find the flowers that yield nectar? Of course bees can see fruit trees or a field of buckwheat or mustard and be attracted to them, but most flowers that yield nectar are comparatively inconspicuous, and something is needed to guide the bees in their flight other than their eyes. A hunter goes to the fields or woods for a day's recreation hunting bees. If he finds a bee on a flower he feeds it and sends it home to get the line; but if he finds no bees he burns a little piece of comb that the odor may drift off with the smoke and attract the bees. One hunter, unable to find a bee, used this method and after waiting a long time a bee appeared, which they were able to line some six miles to its home. A bee leaves its hive in search of honey, flying in ever widening circles until it comes across the odor of some nectar-yielding flower, when it follows it as a fox-hound follows the trail of a fox that has passed, it may be, several hours before. Nothing seems to escape them in their search, whether it be an isolated burdock back of the barn, a little patch of mignonette in the flower garden, or a few stray clover blossoms in the lawn.

How about the drones? They do not gather nectar nor guard the hive, and yet we are told this sense is more highly developed in them than in worker bees. The only excuse for drones is said to be the perpetuation

Experimental apiary and garden of W. J. Sheppard, Nelson, British Columbia
Toledo, Ohio

of the species, and this depends on their ability to meet the queen in flight. Now, if the queen leaves a trail of odor in her flight through the air, as I believe she does, this keen sense of smell will multiply many times the chance of a drone meeting her. J. Henri Fabre tells of hatching some female moths or butterflies in cages in his house when, soon after, his house was literally surrounded by males. He could only account for it by the keen sense of smell in the males.

The sense of touch is very highly developed in bees. I have sometimes been asked whether bees could work in the dark, the questioner little thinking it is always dark inside a hive. It appears to be largely by this sense the bees are able to find their way around inside a hive crowded with bees. In our childhood we called the antennae of bees their "feelers," and so they are, most emphatically, but their sense of touch is not confined to these organs; their tongues and mouth parts are also very sensitive. This enables them to watch the hatching brood and feed it as its age requires. Not only is the keen sense of touch required in the rearing of brood, but in working and moulding their wax into the most exquisite combs, with cell-walls so thin that hundreds of the sides can be laid on top of each other before they will make an inch in thickness. Yet I have never seen one made with a hole through it. The touch of human fingers cannot be compared in delicacy to that of bees.

Many other things might be said in regard to the senses of bees, but if I have said enough to excite the reader's curiosity and lead to study the bees themselves, they will find a never-ending source of recreation and pleasure.

Middlebury, Vt.

Examination of Colonies

The Secretary of our local bee association asserts that last year he examined 300 colonies in three days. Last year he had 600 colonies and says that by this year's working time he will have 800.

What I would like to know of you is, how many colonies, examined, do you call a fair day's work? I have never yet examined otherwise than by removing each frame from the hive-body, looking at both sides, etc.' and, of course, no one could thus do as many as stated.

Probably you examine by just lifting up the rear of a hive—but what about same slipping forward? What about doing this with your heavy hives?

Then what do you see? Are there not often queen-cells in center of frame, thus invisible from below? Then, if there are cups along lower rim of frame, one often could not see whether they contain eggs or not. Dr. Miller has stated that unless cups contain eggs they are insignificant as to impending swarming.

What I would like to know is as to the minutia of colony examination that can be gone through with, quicker than my way as above stated, and then, to what extent such examination can be made to cover the maximum of ground. For instance, one thing seems sure, that 800 colony beeman, by his way of lifting up the rear, can't ascertain anything about queenlessness.

ULSTER, PA.

Answer.—This is a moot question, very much debatable. First, the apiarist may be slow or quick in action, and that would affect the result. One day two men came to paint the cupola of my barn. While one was looking at it and lighting his pipe, probably deliberating how to go at it, the other one had grabbed a ladder, climbed to the roof, crawled to the comb of it, and handed down the end of a rope which was wound around his waist, before the other man's pipe was fully lit. He called for scaffolding and nails and hammer. The first man was probably **methodical,** but this one was **practical.**

I believe 300 colonies may be summarily examined in 3 days, besides making the trip to each apiary. Each hive may be opened, and a glance given to the top of the combs, to ascertain whether they have honey and brood. The queenless ones may be marked, those short of stores may be helped from the surplus of others or supplied from combs at hand. But no thorough examination may be made in that length of time, even by the man who climbed the roof of my barn while his partner lighted his pipe.

No, we do not lift the rear of a hive to ascertain whether they have what they need. But after making sure that they are all right, we might lift a very heavy-looking colony and a very light-looking one to establish a comparison.

If you must look for queen-cells, then do not figure on attending properly to more than 50 or 60 colonies. Personally, we do not look for queen-cells. We expect our bees to get along with very little cell building, if we keep young queens in the hives. Dr. Miller is correct, we think, when he says that cell-cups that do not contain eggs are of no importance.

Queenlessness should be readily ascertained from the outside, as you pass along the row. A queenright colony is busy flying back and forth. A queenless colony is listless and indifferent in action. But we should at least open every hive, and the first sight of the inside, without lifting more than one or two frames, should enlighten us.

Finding out the condition of the colonies is less than half the work, if we have either queenless or starving colonies. The labor consists in remedying the faults; feeding the colonies that are short; uniting or requeening the colonies that are queenless. If our colonies are all strong and all have plenty of stores, the work will be short and the result satisfactory. But this would be an ideal situation. Do we often find it?

The amount of time required to examine 300 colonies, in 3 apiaries, depends on the condition of the bees in those apiaries and upon the season of the year at which we make the examination. It depends also upon just what we want to do. A very practical beekeeper could probably examine 100 colonies during the day and, marking them as he goes, place them in 3 or 4 classes: 1, the good ones, having plenty of brood and honey; 2, the middling ones, having both brood and honey, but of doubtful amount; 3, the poor ones, with some brood and short of stores; 4, the bad ones, queenless or starving. In making this examination he would not be expected to lift the combs of any but the dubious ones. In some cases, he might have to lift all the combs of a colony. But in all this he could do but little to remedy defects, unless he took more time.

If the bees are in good shape, a man can put on the supers—if they are ready—in less time than it requires to examine the bees. So much depends upon the condition of the colonies.—C. P. D.

West Virginia bees packed for winter. L. O. Simmons' apiary at Martinton.

AMERICAN BEE JOURNAL

Established by Samuel Wagner in 1861

The oldest Bee Journal in the English language. Consolidated with The National Bee Journal in 1874.

Published monthly at Hamilton, Illinois.

Entered as second-class matter at the postoffice at Hamilton, Illinois.

SUBSCRIPTION RATES—In the United States and Mexico, $1 per year; three years, $2.50; five years, $4. Canadian postage 15 cents, and other foreign countries 25 cents extra, per year.

All subscriptions are stopped at expiration. Date of expiration is printed on wrapper label.

THE STAFF

C. P. DADANT .....Editor
FRANK C. PELLETT .....Associate Editor
C. C. MILLER .....Questions Department
MAURICE G DADANT .....Business Manager

(Copyright 1919, by C. P. Dadant.)

THE EDITOR'S VIEWPOINT

Exporting Our Product

The American Shipping Board, under date of May 17, published a letter from the Director of Division of Operations showing that there is no reason why America should not be one of the most successful shipping countries and advancing the very powerful and rational argument that, since we carry cargo on the Great Lakes at the lowest cost per ton known in the world's commerce, we should also be able to carry goods to foreign countries at as low a rate as any other nation.

This is sound argument. We need to produce and export our surplus, whether wheat or honey, and we need to import many articles which cannot be produced at home. Let us urge the aggrandizement of our merchant marine.

Diseases of the Adult Bee

The leading article of this number is the beginning of the study of Nosema, by Dr. White. Most of our readers know that Dr. White was the first scientist to positively differentiate between the two main diseases of brood. His studies, completed by Dr. Phillips in additional descriptions, easily place him at the head of students in brood diseases, we believe.

The study of diseases of the adult bee is in its infancy. But scientists, on both sides of the Atlantic, are making investigations. The April number of the "Scottish Journal of Agriculture" contains a 14-page article relating the experiments in Isle of Wight Disease made by Messrs. John Rennie and Elsie J. Harvey. The experiments related are valuable, but we are far from definite and positive knowledge concerning the causes and remedies of the different diseases of adult bees.

Those of our readers who are interested in these studies will do well to preserve this number of the Journal until the entire study of Dr. White is published, which will be in the next one or two issues. Sooner or later, with the help of these careful students, the causes and cure of the different adult bee diseases will be found.

The same number of the above-named publication also contains an interesting article on Scottish beekeeping by our friend and correspondent, John Anderson, M. A. Copies of this magazine may be obtained by sending 8½ pence to H. M. Stationery Office, 23 Forth St., Edinburgh.

Another Boost of Freight Rates on Honey

Just now there is up before the Interstate Commerce Commission a proposition to raise the classification on honey. A hearing was held on the proposal to raise the rate on extracted honey, in barrels, from fourth to third class in the southern classification. Our associate editor, together with a representative of the Root Company and one of the G. B. Lewis Company, was present at this hearing in an effort to make a showing for the beekeepers.

It is a difficult matter to keep down freight rates as long as beekeepers insist on shipping honey to market in packages which will not carry safely. Barrels with less than eight hoops should never be used for shipping honey, and only good hardwood barrels or new barrels of other kinds should be used. Saving a few cents in the cost of a shipping container at the expense of higher freight rates is poor economy. Too many beekeepers refuse to take sufficient precaution in preparing their honey for shipment, thinking that the railroad company will have to pay for any loss. In the end the shipper always pays the loss with a margin beside. The average of losses are charged up in the form of higher rates and the careful shipper is penalized for the damage done by the careless one.

The use of cheap cases should be discouraged. Veneer cases for 60-pound cans should not be offered for sale at any price. The safe case is cheapest, in the end, every time. The breaking of a case of honey in a freight car is an expensive thing Honey smeared over other goods is likely to cause a big loss aside from the honey itself, but it is all charged to the honey, and when the rates will not pay it, up go the rates. There is no better service that beekeeping organizations can do than to look after this matter of proper containers for shipping honey. We all help to pay the bill for the other fellow's carelessness.

The Colony Morale

Having traveled, only a few weeks before, among the steep hills and along the deep lakes of New York State, in my trip to Cornell University, I found it quite a contrast to travel from Chicago to Lafayette, Ind., on the almost lake-level route of the Monon. I was under the impression that the builders of this railroad had named it thus originally because they considered it "the only one" worthy of the name of railroad (from the Greek, monos, unique). But this is only the name of a town through which the line passes, and thus I lost some imaginary poetical idea connected with prosaic railroading.

Purdue contrasts greatly with Cornell, in the scenery. Were it not for the Wabash river, which separates the university from the city of Lafayette, and a slight hill to ascend before reaching the grounds, one could not find tamer scenery. The University itself compares well with others in its extent, its buildings and the courses it furnishes to the student. A very interesting trip through the institution was given us on the fourth day, under the guidance of Dr. J. Troop. Entomologist. Universities usually neglect an opportunity of this sort to make themselves known, to strangers, in their details.

The course in beekeeping was held

in the main agricultural building. The attendance was not large, perhaps only a third of that at Cornell, not over 50. If beekeepers only knew how much they can learn at such courses, the attendance would have been ten times as large. Courses in beekeeping are a new thing, comparatively, and we, old heads in the commercial line are apt to overestimate our knowledge and make light of the theories brought forward, backed by experiments which sometimes contradict our preconceived ideas. Much that we think we know we have to "unlearn" or correct.

As I was present during only two days of the course, it will be out of the question to give a review of it all. I prefer to speak of only one point which impressed me more than any other. This was brought out by Mr. Demuth under the name of "morale."

We already know that we must rear the excess of our bees **for the crop** and not **on the crop.** But we must also be careful to encourage their morale, or their activity at the time the crop is on.

Do bees loaf, and what causes them to loaf? Although the actual loafing of bees may seem preposterous as an affirmation, there is no doubt that colonies of certain disposition or in certain circumstances show more activity than others. I positively know that colonies which have been transported from one spot to another some distance away, in spring, show more activity than others that have remained at the old stand. There appears to be something in the change of surroundings, or in the shaking-up which they have experienced, which impels them to greater activity.

That some bees do loaf at times seems quite plain when we examine a colony of bees and see the unconcerned appearance of many of them, which contrasts with the activity of many others in the same hive. Everybody knows that a queenless colony loses much of its activity; that a colony from which the honey has been extracted, during the crop, and combs returned to it still daubed with honey, will more eagerly go to work; that when a super is raised which is almost full and an empty one placed between it and the brood-chamber, the bees seem to hasten to fill the vacant space.

As Mr. Demuth put it, "if we can increase the activity of our field workers by one single trip a day we will increase our crop largely."

Empty cells near the brood urge the bees to greater activity. If we can fix our colonies so the bees cannot see the finish of their job, a hive full, we will keep them in a condition of greater activity.

Although we mentioned this possibility of greater activity years ago, yet we did not put as much stress upon it as does Mr. Demuth. He is surely right. Others have spoken of it before. The "baits" or partly built sections put into a super are inducements to greater activity. In paragraph 745 of the "Hive and Honey Bee," at the end of the chapter on "Comb-honey Production," we quoted W. Z. Hutchinson, who at page 18 of his "Production of Comb Honey," wrote: "We have seen bees sulk for days during a good honey-flow, simply because the present condition of things was not to their liking."

If I had gained but this emphasized idea concerning the required "morale" of the colonies during the crop, I should consider my trip to Purdue well paid.

Let me close this argument on morale by quoting Demuth's comparison of men and bees: "We should try to increase the activity or morale of our bees during the crop in a way similar to the increased activity of the human race, caused by the late war."

Beekeepers Should Be Organized

It is becoming more and more apparent that only through general organization can the beekeeper hope to secure such a measure of prosperity permanently as is opening for other lines of business. Labor is now thoroughly organized in all the trades, and these various organizations are federated into one body, which is very effective in securing for the laboring man the rights to which he is entitled. Big business is being organized in a similar way, and there is a federation of business men, which looks after the interests of business.

Unless the various agricultural activities shall become organized in a similar manner, there will be no means of securing the ear of the public as to the needs of agriculture. The unorganized business is the last to secure attention, and the first to suffer inconvenience in any abnormal condition. It is to be hoped that the beekeepers will see the necessity of organizing into local associations and that some plan can be worked out of federating these local associations into a general organization which will be sufficiently powerful to meet any emergency that may arise.

Beekeepers' Letter

The Michigan Agricultural College issues circulars with the above title, in co-operation with the Extension Division of the U. S. Department of Agriculture. The May letter by that active worker, B. F. Kindig, drew our attention very especially because he quotes extensively from our editor's address of the past winter to the Michigan State Association, on "Large Hives." That subject seems uppermost in many minds, among beekeepers. We even find it discussed at length, at the antipodes, in the April number of the Queensland Beekeepers' Association Journal. The idea of large brood-chambers is apparently accepted everywhere. The Europeans accepted it long ago, with the movable frames. The only question debated now in this country is: "In what shape should the large brood-chambers be used?"

The Beekeepers' Letter above mentioned also calls attention to the occasional similarity in appearance between American and European foulbroods. The statement is made that the two diseases rarely appear in the same colony at the same time. Are we very sure of this?

Beekeeping for Disabled Soldiers

"Vocational Rehabilitation Series" are issued by the U. S. Government for the benefit of disabled soldiers. Number 37 of this production is entitled "Beekeeping," contains 32 pages, a number of fine cuts, and indicates how cripples may succeed and **do succeed** in beekeeping. We cannot expect many of our disabled soldiers to take up beekeeping. It requires special tastes and aptitudes. No man who dislikes the work can succeed in keeping bees. But if the opportunity opens its door to a few, as it is sure to do through the help of these monographs, much good will result. Too many people slip away from the farm, expecting both more remuneration and more leisure in city pursuits. They soon find those prospects elusive and anything which will draw them back to the farm, or at least to the suburban plots, must prove a step of value to the country. Go back to the country, you city dwellers, and become producers as well as consumers.

THE PASSING OF EUGENE SECOR

A Tribute to a Beekeeper Who Was One of Iowa's Best Known and Most Beloved Sons, and Who Was Widely Recognized in Other Fields

By Frank C. Pellett

MANY hearts were saddened by the word of the death of Eugene Secor, of Forest City, Ia. Gored by an angry bull, on May 14, he died the same afternooon. It falls to the lot of few men to bind the hearts of so many in the ties of friendship as he did. Eugene Secor was one of the world's noblemen. He was not a specialist and did not rise to great eminence in any field, yet he was a leader in several. It was as a horticulturist and beekeeper that he was most widely known. He began contributing to the pages of the American Bee Journal nearly forty years ago. For many years he was prominent in the beekeeping field, having served as Vice President, and later as President of the North American Beekeepers' Association; the name was later changed to National. He was afterward treasurer and general manager for a period of six years. Mr. Secor was selected as the sole expert judge of the apiary department of the World's Columbian Exposition held at Chicago in 1892-93, and later served in the same capacity at the Omaha Exposition. For many years he judged the bee and honey exhibit at the Iowa State Fair.

It was during the years of Mr. Secor's greatest activity that the National Beekeepers' organization reached its greatest success, and undoubtedly his efforts contributed greatly to that end. It was as a writer of songs and poems that he, perhaps, became best known in the beekeeping field. Several of these songs were set to music by Dr. C. C. Miller and George W. York and sung at the beekeepers' conventions. "The Hum of the Bee in the Apple-Tree Bloom, "Buckwheat Cakes and Honey" and "The Beekeepers' Lullaby" were sung in hundreds of beekeepers' families a generation ago.

As a horticulturist our friend was known from one end of Iowa to the other. His home, "The Shelter," at Forest City, was surrounded by one of the finest collections of trees and shrubs in the middle west, and fortunate was the nature lover who found himself a guest in that home. Mr. Secor and daughter, Miss Nina, were able to make their guests feel very much at home, and delightful was the atmosphere of the place with its wealth of books and magazines, inside, and flowers out-of-doors.

With his bride Mr. Secor settled at "The Shelter" more than fifty years ago. All, excepting a few old trees there, have been planted by his own hands. Few trees and shrubs hardy under Northern Iowa conditions are missing from the collection, and hardy, herbaceous plants have not been overlooked. Plant breeding has been a fascinating pursuit for many years. Crossing the peony was a specialty which claimed his attention for some time past. I have nearly two dozen new varieties which were originated in the Secor gardens and they are a never-failing source of pleasure to me. The fact that they were the result of my friend's dreams and the parent plants were crossed by hand pollination, in an effort to work out the types which he desired, add greatly to their value to me. The collection at the "Shelter" included many hundreds, and they are a wonderful sight at blooming time.

There has probably not been a volume of the reports of the Iowa Horticultural Society that has not contained some contribution from the pen of Eugene Secor. He was at one time President of that organization, and for many years a director. At the time he first settled in Iowa the State was very new, and little was known of the varieties of fruits which would be suited to its special climate. He went through all the painful process of planting hundreds of varieties which could not stand the rigorous winters, or the hot, dry summers, and suffered the disappointment that always comes through losing a coveted variety. Most of the joy of life to the nature lover comes through the acquaintance with new varieties, and Eugene Secor tasted to the full the pleasure that comes to the man of scientific turn of mind from investigation of nature's secrets. In addition to his beekeeping and gardening activities, he was a breeder of shorthorn cattle, and for many years was President of the Farmers' Institute of his county, and also of the Winnebago Agricultural Society. Not only was he active in various lines of agriculture, but in business as well. As one of the founders of the City Bank, later the First National Bank of Forest City, he was closely connected with the commercial development of his town and county.

As a churchman he also rose to leadership, having been a delegate to the General Conference of the Methodist Church, to which denomination he belonged. He was also a member of the Board of Trustees of Cornell College, of Mt. Vernon, Ia., for several years. In politics he was also successful, having held several offices, including a seat in the House of Representatives, and also the position of postmaster of Forest City.

Our friend was a well-balanced man. Everything which interested him he investigated thoroughly, but he did not become warped in his judgment and narrow in his views through too close attention to one subject. His indomitable spirit was not crushed by adversity and his life offers a fine example for the young manhood of his community. Seven of his ten children died before he did and his wife preceded him in death by seven years. No matter how great his loss, or how deep his cause for anxiety, he was always genial and uncomplaining.

He continued his interest in bees until the end, but only with about

The Secor home at Forest City.

twenty colonies, since he was no longer equal to the physical exertion necessary to care for a large number

I count it a great privilege to have known Eugene Secor intimately and, in common with others, feel a sense of great personal loss in his going. His memory will be cherished in many breasts to the end of life, as the following poem, clipped from his home paper indicates was his greatest wish:

If I Should Die Tonight

An atom in the vast universe,
A bit of star dust in a field of light
Am I, nor would the world its course reverse
If I should die tonight.

The air is full of spirits of the past,
Spirits that once to the flesh were clear to sight;
Forgotten all, as I shall be at last
If I should die tonight.

But deeds, not men, are what alone survive,
Pure thoughts are angels clad in garments white.
Will words or deeds of mine remain alive
If I should die tonight?

Shall one kind act, one unremembered wrong,
One helpful word by me to cheer the right,
One phrase remain to speed the truth along
If I should die tonight?

Of all the ones I know who call me friend
Would one, just one, for life keep memory bright
With some sweet thought I spake while here, or penned,
If I should die tonight?

—Eugene Secor.

Troubles With an Obstinate Queen

By G. C. Greiner

WHEN I first changed from the production of comb honey to that of extracted I knew from former experience that a clean, appetizing article could not be produced without the use of excluders. I had occasionally used an extractor for the purpose of reducing an overplus of honey from the brood-chamber. Some of the combs from which I intended to extract the honey contained, quite frequently, more or less brood in different stages of development, and it was next to impossible to extract the honey without disturbing the brood. Even with the slowest motion of the extractor that would throw out honey at all, quite a showing of different sized larvæ would be floating on the honey.

This decided the excluder question for me. The first dozen I used did not prove satisfactory. They were of earlier days' make and the bee-passages were much too large, giving the queens access to the supers in too many cases. Of course, I discarded them and instead tried the regular standard make of the present day, having .163 inch perforations. But these, too, did not entirely satisfy me; they excluded the queens all right, but I mistrusted they were honey excluders as well as queen excluders. After that I used excluders with .172-inch perforations. I could not find them in market, but had them made on my special order. I am not positively sure that I get more honey by their use, but they certainly are easier for the bees to pass through them, and they exclude queens as well as those finer ones with .163-inch perforations.

The reason why I have bri fly outlined my excluder experience in the

A corner of the Secor home grounds at Forest City. Mr. Secor had the finest collection of trees and shrubs in Iowa.

foregoing is because the excluder plays a prominent part in my queen story that follows.

The queen in question was the head of a colony I purchased early last spring. At the time I made my divisions, May 12, she was left with two combs of brood and the necessary filling out of the hive with division-boards and empty combs on the old stand. After that she built up her colony in the usual way, or perhaps a little better than the average. About June 15, a few days before the white clover flow came into full swing her hive with the rest of the same class received its extracting super with a .172-inch excluder.

In due time, when I was preparing to supply second supers to the needy hives, I found her super stocked up with brood from side to side and the queen on one of the combs, but the brood-chamber, as I afterwards found, was full of honey and pollen, and not a sign of any brood. This arrangement did not suit my fancy, and I decided to rearrange her ladyship's domicile according to my own notions.

A few days later I made the change. I removed all the combs from the brood-chamber and transferred the brood, queen excluded from the super into the former, at the same time filling the super with empty extracting combs and exchanging the coarse excluder for one of the finer type. On paper this operation looks easy, or even with hive and super empty, except combs, no particular hardships are encountered, but when both are crowded with bees it is anything but an agreeable job. I disposed of the crowded super easily enough by setting it, covered up, on an empty hivebody behind the hive, but when I took the combs from the brood-chamber, the bees seemed to lose all self-control. Smoke had no effect on them. They were running in all directions, over the frames, up and down the sides and ends of the hive, onto my hands and arms, over the edges of the hive, etc., and when all the frames were removed the hive-body, inside and out, was black with bees. And with such general uproar the operator has no inkling where the queen may be. To save her from possible harm all handling of the colony must be done very cautiously.

Transferring the brood from the super to the brood-chamber was comparatively an easy task; the bees had quieted down to almost normal and objected very little to the handling, and as the queen was found on one of the combs also, all my anxiety in her behalf was removed.

When I examined this hive the next time, a week or ten days later, I again found eggs and young brood in some of the combs above the excluder, and the queen presiding over the newly-established household. She did not remain there very long. I shook her on the alighting board and saw her safely enter her proper home. The brood, which she had started above, I scattered among solid combs of honey, expecting that that would settle all disputes in regard to her home claims for all time to come.

About two weeks later, when the dark honey flow was well under way and other colonies needed more storage room, I expected that this queen (or her colony) would need another super, too; but to my surprise and annoyance found her super to be a well-stocked-up brood-chamber a third time. Taking out the comb on which the queen was found I gave it an unceremonious shake in front of the home, which she had deserted twice before. I have not seen that queen nor opened her hive since.

As it was getting late in the season and the prospect of getting any surplus honey from the colony extremely uncertain, I left them to arrange and manage their home affairs to suit their own fancy. Whether the queen remained in the brood-chamber after the third transfer or again passed through the excluder I did not find out. It being so nearly time for the adjustment of winter cases and winter packing, I built a two-story case around this now two-story hive and provided substantial packing the same as for all single-hive colonies.

The contrariness of this queen, with perhaps a little undue persistency on my part added, cost me, roughly estimated, about 100 pounds of surplus honey last summer. All in all, I extracted from this colony, mainly from the brood-chamber, about 40 pounds, while the rest of my yard averaged over 200 pounds, of which nearly one-third was comb honey. Had I been a little more indulgent with this queen and granted her the privilege of using that super for her brood-chamber, as she seemed to prefer it, one or two supers of surplus honey from this colony would have been almost a certainty. Placing a second and third super with another excluder on the first one would undoubtedly have produced the desired result.

La Salle, N. Y.

To Get Rid of Foulbrood

By Lieut. Alin Caillas
Ingenieur Agricole, Chimiste de la Societe Centrale d'Apiculture.
Etat-Major de la Division, Secteur Postal 41 (France.)

ALL apiarists know, at least in name, this illness, which is common in several parts of France. Its ravages are most important. I know of entire regions, that are privileged ones as regards climate and flowers, but where beekeeping has become practically impossible, on account of the extension and propagation of this awful plague.

Plague is no exaggerated word for it; foulbrood may be compared, keeping in proper limits, with Indian plague, cholera, Spanish influenza or, —to leave out human diseases—with pebrine and muscardine that threatened, some fifty years ago, to destroy French silk-husbandry. But Pasteur was on the lookout, and thanks to his learned workings and patient researches, a remedy was found.

Our apiarists have, generally speaking, but small information, vague and imperfect data on this question. Things do not stand so abroad. Cheshire, in the year 1885, Maasen, 1907, Dr. White, of Washington, Professor Zander, 1910, discovered and studied the **bacillus alvei,** the **bacillus larvæ,** the **streptococcus apis,** the three of which bring about, under different forms, the illness commonly called "foulbrood."

During a recent furlough which I spent on the Cote d'Azur, in that enchanted seaside country all strewed with flowers, where carnations, roses, mimosas give the land a matchless ornament, I was fortunate enough to renew old acquaintance with one apiarist whose name is well-known to all readers of this journal—Mr. Ph. J. Baldensperger.

Mr. Baldensperger may be called an apostle. A long life of learned workings, all devoted to the study of bees, makes him an uncontested master in the matter. He has traveled in nearly all parts of the world, speaks and writes English, Italian, German and Arabic as well as French; so that he certainly is the best qualified apiarist of our times and the most learned and most enthusiastic one I know of.

Moreover, his enthusiasm is catching. During our walks in the environs of Nice, our conversation often came to the subject of foulbrood. Mr. Baldensperger knows it well, for he had to suffer damages through it. He has noticed its effects, but, in spite of his thorough science of apiarist, it remained for him without any remedy.

Yet, in the course of his long researches, he had the good fortune of coming into relations, at the Societe Naturaliste de Nice, with a learned and distinguished biologist, Mr. A. Prudhomme, of the Paris and Strasburg Universities, a former scholar of the Institute Pasteur.

For such a learned a gentleman as Mr. Prudhomme, the question of foulbrood could not fail to be an attaching one. Quickly, he read and studied all that had been written and done about that question, so as to well master it. Then he applied modern methods to cultivating the three microbes which we have named above, and he succeeded, after patient researches, in cultivating, isolating and fixing them.

The microbes of foulbrood develop in the intestines of the larva; they may be compared in all respects to those of Eberth (typhoid fever.) Now, typhoid fever can be treated in accordance with two methods—ordinary vaccination, or entero-vaccination, i. e. vaccination absorbed through the digestive tube.

Mr. Prudhomme succeeded in bringing about a polyvalent entero-vaccination, i. e. virus that can be opposed to the infection brought about by the several bacterias of foulbrood. I beg leave to quote here his own words:

"The cultivation grounds to be chosen were a most serious difficulty,

but the previous workings of the above-named authors had prepared the way, and so I was able to cultivate on choice grounds for every one of them the various bacterias in question, including the bacillus larvæ, the cultivation of which had remained practically impossible heretofore. It was then necessary to stabilize these cultures. This has been carried through, too, and already for months I have been able to bring out a polyvalent virus that is satisfactory in every way. The virus, enclosed in a glass ampulla, should be mixed with a kilogramme of honey or of sugar syrup, and this should be given as food to the polluted beehive. The contaminated larvæ are lost anyway, but the infection ceases, the new larvæ being fed on this mixture do not catch the disease, the laying of the queen does not stop, the active life of the swarm is carried on and, as the population keeps on a sufficient level, the plundering of the hive is avoided. After a fairly long time, generally over one month, the effects of the illness have disappeared."

Mr. Prudhomme's experiences are to be considered as quite conclusive. But, according to the author's wish, these experiments should be repeated as often as possible, not only in the several regions of France where foulbrood has spread itself, but also in foreign countries.

Mr. Prudhomme is at the disposal of all apiarists to forward them, free of cost, the virus he has brought out, the making of which he keeps a secret. All necessary information will be given. In return, apiarists are requested to kindly report their observations and the results ascertained.

By repeating such tests, by renewing them in the most varied situations and circumstances, we may hope, with the help of all interested, to succeed in wiping out the dreadful plague that threatens to annihilate forever a most important source of our national riches.

Virus can be obtained from Mr. Prudhomme, Chimiste Biologiste, 1 Rue Cotta, Nice (Alpes-Maritimes), France.

(This is very interesting. But in the case of what is called in this country "American foulbrood" or "bacillus larvæ," it is out of the question to bring about a permanent cure without doing away with the contaminated combs, for the reason that the dead larvæ are fastened to the lower cell-wall of the cells in such fashion that the bees can rarely remove them. As to the other disease, which Dr. White calls "bacillus pluton," and which we have reasons to believe is the same as that described by Cheshire under the name of "bacillus alvei," the case is different, for the bees easily remove the dead brood.

The reappearance of bacillus pluton in an apiary, after the disease has been considered cured, might be prevented by a trial of the method above given by our learned friend, Lieutenant Caillas, provided the virus be not too expensive. In this country, profitable beekeeping is carried on in large apiaries, and any method, to be successful, must admit of the treatment of all the colonies in an apiary. That is why so few of our experienced apiarists are willing to depend upon any drug system. But it is well proven that the bees need never be killed to do away with the disease; neither is it necessary to burn anything but the combs actually containing the dead brood, and that only in the case of "bacillus larvæ."

We are just beginning to learn how to treat the different bee diseases, and it behooves us to listen to all suggestions and to give trial to all the plausible methods.)—Editor.

Smoke Introduction

By Major Shallard

I AM always at a loss to account for anyone failing in queen introduction by the smoke method. I first used this over a quarter of a century ago. I have used no other since, never having any need to. I was rather amused at its discovery (?) a few years ago by Mr. Arthur Miller. Every now and again someone reports a failure by the method, and that is what puzzles me. Then rather elaborate instructions are given on the subject. The queen must be run in under certain conditions and so many puffs of smoke must be given, etc. One of the editorials of a bee journal said that to insure success it was imperative that the hive be free from cracks and tight enough to hold the smoke.

I find none of these precautions necessary. I just flop the queen in any old way and apply the smoke, and introduction has become such a simple matter with me that I feel that I could drop a queen into a hive and throw my hat at it (at the hive, not the queen) and it would be safe (the queen, not the hive).

I do not make any claim to have any special skill in queen introduction. Rather do I contend that no skill is needed. The whole matter is summed up in the word "demoralization."

The bees "dunno where they are" and in that condition anything can be done with bees, or anything else. You get an unbroken colt out of the bush; put a halter on him, as soon as he is quiet enough to let you; tie his head to his tail and then frighten him, and he will turn round and round like a top until he gets giddy and does not know what he is doing. Get the harness on him quickly and you can drive him like an old stager, simply because he is demoralized. Do not make the mistake of keeping him in the harness too long or he will get his senses back and kick the stuffing out of the vehicle. It is just the same with the bees. Get them befuddled and they do not know one queen from another, and, in fact, are not sure whether they previously had another queen at all. On one occasion I was introducing a queen into a very leaky three-story hive and I heard a strong hum over my head. I found the bees were pouring out of the top story and lighting upon a bough. They were dark scallawag bees, and while I was looking I saw the new queen settle among them. She, being bright yellow, was very conspicuous. I put them back and as the genial Dr. Miller would say, "they lived happy ever after." Some claim that the method will not act with two-story hives and three-story ones are impossible. This is all tommy nonsense. It will act with any hives of any size, any make and almost any leakiness. It is simply a matter of giving enough smoke. A big hive obviously needs more smoke than a small one and a leaky one more still. My method is simplicity itself, I kill the old queen. Have a piece of flat wood large enough to close the entrance. I put the hive together and just before pulling the cover on I drop the new queen down between the combs at the top. I then put the top on, close the entrance with the board, all but half an inch. I puff **cool** smoke into the h've until the bees roar,and they fight to get out at the entrance. After they are thoroughly upset from top to bottom of the hive I cease smoking and close the entrance altogether. After three to five minutes I open the entrance slightly, and if they rush out I close it and try again in another couple of minutes, when they will have settled down and very few, if any, will rush out. Then open the entrance full and the trick is done. It is as easy as falling off a log, as sure as death.

Australia.

"Honey Yellow"

By Allen Latham

IF one hundred people, acquainted with honey but otherwise chosen hap-hazard, were asked, "What is the natural color of honey?" what would be the composite answer? This question is raised for a two-fold reason; first, because better sales of honey would result on account of greater confidence of the buying public were there greater uniformity in the color of bottled honeys. If the darker honeys were diverted to other uses than bottling and if the colorless honeys were blended with the ambers for the bottling trade, the result, I believe, would be greatly beneficial to the honey trade. In fact, some of us producers are already doing that very thing, and, in the East at least, blended honeys will put other kinds out of the market.

The second reason is, perhaps, of less importance, but has importance from an educational standpoint. This second of the two reasons that have led me to raise the question under discussion is the injustice so often done in judging honey exhibits at fairs and food exhibitions. It has come under the observation of the writer that few judges can get away from the notion that the less color a honey has, the better the honey. Too many times have I seen first premium awarded to a honey almost without color, while other honeys in the contest, possessing some color, surpassed the prize honey in body and clarity.

Should honey be free from color? Last fall the writer acted as judge

at a certain fair. Under the exhibit of light honey were two close competitors for first place. One of these was practically colorless, while the other was a light amber. Had the second had less color, had it been golden in tint, there would have been no question about the placing of the award. But the second was almost too dark in shade, while on the other hand, the first was too pale. The second, though rather strongly colored, was awarded first prize on the ground that it possessed a better flavor and was superior in clarity. Several persons present questioned the judges' decision and asked whether a mistake had not been made. When the matter was explained to them they saw the justice of the award.

Now, for a fact, only a few honeys are colorless, or what might be termed colorless. Basswood, alfalfa, clethra, goldenrod, aster and alsike clover are practically the only honeys seen in the East that could be termed colorless, and often many, if not all of these, possess considerable color. California produces some almost colorless honey, and there are plants in the South that produce water-white honey. Against these can be named a host of blossoms that produce honeys that are tinted with yellow or red. Some of the noblest honeys of all are thus tinted. Raspberry, unmatched for eating, is tinted. Clover, by many considered the prime honey of all honeys, has a yellowish cast. Sumac produces a honey which has a beautiful golden cast, and connoisseurs, the country over, pronounce it the best of all. Apple-bloom honey, in the opinion of the writer the very nectar of the gods, is distinctly golden. Orange-bloom honey, much like that from apple blossoms, captures the palate of many honey lovers. When it comes right down to enjoyment of eating honeys, there are few colorless honeys that have that property termed tastes-like-more to the same extent that other honeys which possess some color must be credited with.

The buying public, though largely possessed with the idea that the best food is white—white flour, white sugar, white rice, cream of wheat, white corn—will pick honey with a tint rather than that which is colorless. The impression has long been present that honey is naturally yellow, and so we often run across such expressions in printed books as "honey color," "honey yellow," "golden honey," etc., all of which expressions either in themselves, or by the context, convey the impression that, the world over, honey is thought of as of a yellowish or golden color.

If this is the general impression, should a colorless honey rank higher than a golden honey? I for one, should say no; and to revert to the question submitted to a hundred honey consumers, I think the answer from the vast majority would be "yellow or straw color."

The Century Dictionary defines a pure honey as "of a whitish color, tinged with yellow." Evidently the authors of that book are not acacquainted with the chocolate honey of buckwheat, the red honey from huckleberry, the water-white from clethra. But that definition confirms my contention that honey is usually thought of as having some color, and that color yellow.

It is not wise to work against a strongly ingrained public opinion. If people in general think of honey as yellowish or golden, then we honey-sellers should try to attain that color in our bottled goods. By doing so we shall help to increase the sale of honey.

Norwichtown, Conn.

Mr. Barbeau preparing queen-cells by his new method.

The Barbeau System of Queen Rearing

WE have received the following letter and accompanying cuts from Mr. E. Barbeau, of St. Eustache, Quebec:

The enclosed photos illustrate the queen-rearing system which I have invented. It is exceedingly easy to operate. It consists of:

One cylindric punch.
One pusher.
Waxed aluminum capsule tubes
Royal cages.

The cylindric punch is used to cut, out of the comb, one cell containing a larva one day old, to have the latter developed in a queen-cell.

In order to use it with success, it is advisable to rub a little vaseline on the inside and outside of this punch, so that it will not stick to the comb.

The waxed aluminum capsule tubes are used to receive the cells from the punch after they are cut; you simply push the cell from the punch into the capsule tube, by the use of the pusher.

It is not necessary to put any royal jelly in the cells to induce the workers to start queen-cells out of them, when conditions are right. They do it of their own accord.

The royal cages are used to keep the queens prisoners after they are hatched.

Nothing is easier than these operations. After preparing 30 or 40 capsules or more, you screw them into a comb which you place in a colony which has been made ready for queen rearing.

I trust the above information is sufficient to make anyone understand my system.

Swarm Impulse

By Arthur C. Miller

TO write something which receives commendation from Dr. Miller is indeed gratifying, but so to express one's self that part of what one says confuses him is most regrettable.

Yes, Doctor, I did mean that there is no more danger of having swarming impulse inherited through swarming cells than through cells reared in any other way from the same colony. I believe that biologists are now pretty well agreed that acquired characteristics are not transmitted through inheritance, and it is absurd to believe that food from swarming bees could impart the swarming impulse to queens they reared and fed. We would as soon expect a baby brought up on cow's milk to moo.

I go farther, and question how far it is true that some varieties or strains are much given to swarming. I know that such is common belief, but I think external factors are largely instrumental in exciting the swarm impulse. But some strains may be more susceptible to external influences.

Reproduction by division (swarming) is doubtless an inherited trait of bees, but that an increased tendency to so divide exists and is inherited I do not believe. As an example, the Carniolans are said to be great swarmers. But here we have an Alpine bee, taken from high altitudes, a bee whose constitution is adjusted to a rarified and a relatively cool atmosphere, and we subject it to our lower altitudes and hotter climate. In its native home it has not a reputation for excessive swarming. Is not its swarming habit here due to its reaction to external conditions? What would be the result if we should take some of the swarming Carniolans of our low lands and put them well up in our mountain regions? (I venture to assert that the excessive swarming would disappear.

It is not partucularly difficult to start the swarming impulse in any colony of normally well-behaved bees by sundry manipulations, such as adding drones and drone-brood and an excess of young nursing bees.

As to leaving a ripe and just-started cell, I do that to guard against

The Barbeau queen cage.

Preparing the cupule

hopeless queenlessness, and it is done when a swarm is returned without the old queen, or when the old queen is removed to prevent swarming. I have found that the very young cell is generally allowed to develop until the queen from the ripe cell is mated. If she is lost in her wedding flight the colony has something to take her place. Not so with two cells of nearly the same age, for the second one is pretty sure to be destroyed soon after the first hatches. All of my yards are at a considerable distance from home and are not visited often, so some plan seemed necessary to guard against disaster from queen loss.

I am aware that such a colony may swarm when the first virgin flies to mate, but in this locality, with our slow honeyflows, they seldom do. But swarming is rare among my bees, so perhaps my experience is not great enough to be a fair criterion of the plan.

Providence, R. I.

Glad we are agreed on your first proposition. If queen-cells are to be used from a certain colony, I would make no choice between swarming-cells and those reared under the hand of an expert at some other than swarming time. But if the matter is in the hands of an inexperienced beginner, I would much prefer the swarming-cells.

You believe that under certain conditions Carniolans will not swarm more than others. Well, that doesn't particularly interest me; if they swarm under my conditions, it's immaterial to me what they do under other conditions. The thing that interests me is that under my conditions there is a greater tendency to swarming in Carniolans than in others, and it seems to me they get that tendency from their folks. If you have some other name than heredity for it, well and good.

As to that matter of leaving two queen-cells, there seems to be something of a tangle, and I suspect if we were face to face we would be likely to be found of the same mind. In November, 1915, American Bee Journal, page 379, you say: "Usually I then cut out or destroy all but two cells, leaving two of as nearly the same age as possible." In your present article you speak of "leaving a ripe and a just-started cell." Must be some muddle somewhere.

Going back to my article on page 55, February Journal, I quoted you as saying: "When two cells of nearly the same age are left, one is destroyed soon after the first hatches, but not so when one cell is very young, or just started." And then I said: "I've always supposed it was just the other way around." I can now see that our misunderstanding may have arisen from the fact that I had in mind swarming and you didn't. For if two cells of nearly the same age are left, I should not expect one to be destroyed soon after the first hatches, but to be cherished and allowed to reign after the departure of the first with a swarm. If there is to be no swarming, then I would expect that the older the second cell, the sooner it would be destroyed.

C. C. MILLER.

Rearing Queens Over Queenright Colonies

By C. C. Miller

IF a colony has its queen taken away during the working season, the bees will start queen-cells upon some of the young worker-brood present, and proceed to rear a queen. Entire removal of the queen is not absolutely necessary to give the bees a feeling of queenlessness, and to make them act accordingly. It is well known that if all but one or two of the frames of brood of a colony be raised from the brood-chamber and put in a second story, there being an excluder between the two stories with the queen in the lower story, the bees will be pretty certain to start queen-cells in the upper story.

It is perhaps quite commonly thought that this is because the queen cannot get into the upper story. It is, however, a matter of "does not" rather than "cannot." Instead of an excluder between the two stories, let a sheet of heavy cotton be placed over the frames of the lower story, the sheet, being small enough for the bees to pass back and forth at the sides or corners. The queen can pass up and down as well as the bees, but she **does not,** and so

The Barbeau system requires very simple tools.

long as she does not the bees will start cells in the upper story as promptly as if the queen-excluder were present.

The distance of isolated brood from the queen is a matter of importance. The first case on record of a queen being reared over a laying queen of which I have any knowledge occurred in this wise: I had a number of empty brood-combs that I wanted to protect from the moth, and I piled four stories of them over a medium colony. Fearing that the bees might not reach the combs farthest from the brood-nest, I put one or two frames of brood in the upper story. Later on, upon opening the hive, I was greatly surprised to find in the upper story a nice little brood-nest and a young queen laying. There was an opening at top from which the young queen could take her wedding flight, and she had evidently not invaded the domains of the reigning queen below. In this case there was no excluder, and nothing to prevent free passage from top to bottom; so it was the mere matter of distance that gave the bees the feeling of queenlessness.

Since then I have had a number of cases in which the same thing occurred without any intention on my part. In a number of cases I have also designedly put brood above, in order to rear a queen, but failed every time. I don't know why. I think others have had better success.

There seems to be a difference as to the degree of intensity of the feeling of queenlessness on the part of the bees, perhaps dependent on the degree of isolation. The closer the isolated brood is to the queen, or the more open the communication, the less the feeling of queenlessness. Perhaps, also, there may be a difference in the bees themselves. A colony with a young queen is not so likely as one with an old queen to start cells over an excluder. Indeed, one is not always entirely sure that cells will be started, whether the queen be old or young. But practically always one may be sure that if cells already started are given over an excluder, with a laying queen below, such cells will be respected and treated just the same as if they had started the cells themselves. They may not feel queenless enough to start cells, but they do feel queenless enough to take care of them and continue them if cells are already started.

In all of this the excluder in mind is the common zinc queen-excluder. The result may be a little different with the wire excluder, on account of its greater openness. In the American Bee Journal for December, 1918, page 412, W. J. Sheppard says: "It was found that when the new queen-excluder was used, the bees, as a rule, would not build queen-cells, except when a shallow super was put above the first story, and a second wire excluder over that * * * But if an ordinary zinc excluder was used instead of a wire one, there was no difficulty in getting the bees to build queen-cells."

We speak generally of rearing a queen over an excluder. It may be under, or it may be at one side. I think, however, that bees over an excluder feel more keenly their queenlessness than when under or at one side.

When, then, we desire to rear queens in a colony with a laying queen, we may feel about sure that cells will be started if the story containing the brood be separated from the story containing the queen by an extracting super and an excluder; that they will generally be started if a zinc excluder is used without the extracting super; and they will generally not be started when a wire-excluder alone is used. Also, that if cells already started are given, we may feel quite sure they will be continued if a zinc excluder be used. With a wire-excluder I'm not sure whether we can count on their being continued unless an extracting-super also intervene. Marengo, Ill.

A Successful Queen Breeder

By E. G. Carr

MANY types of persons keep bees, and when a queen-breeder is able for twenty-five years to satisfy, with hardly an exception, these various tastes, one wonders how it is done. Such a queen-breeder is Lloyd H. Robey, of Worthington, West Virginia.

Mr. Robey was born in Lumberport, not far from his present home, in September, 1850. He was left fatherless in early childhood, and at the age of 12 started to learn the shoemaker's trade. He became expert, and so mastered the tools of the trade that, to use his own words, "If I were going to build a house I would use the shoemaker's tools." He uses a crooked sewing awl for a grafting tool.

Bees were taken up as a side line with the hope that they might prove profitable in honey production, as too close confinement at the shoe-bench had brought on considerable digestive trouble. Finding the nectar supply insufficient to make honey production profitable, Mr. Robey took up queen-rearing, and after having mastered the intricacies of the business, began, in 1891, to supply queens to the trade. From that time his business has grown until the output the last few seasons has been about 3,000 queens.

Mr. Robey uses the hand-made "Doolittle" cell-cup and grafts into them the smallest larvæ which can be handled, after priming the cups with "royal jelly." They are then given to a colony which has been prepared for cell-starting by removing it from its stand and in its stead placing a hive containing four combs of honey and pollen and one frame of brood. The bees from about four combs from the removed colony are shaken into the prepared hive and in five hours, or about noon, fifteen grafted cells are given, after the frame of brood has been removed. The next morning the started cells are put in the upper story of a strong colony for completion. The cell-starting colony is then restored to its former place and condition and in two days the process is repeated.

Frames for the mating hive are of such size that three will fit into a Langstroth size frame. Two or three are used for a nucleus. Twin mating hives are used, as are also some holding four nuclei.

Formerly these were stocked by fitting them into the "L" frames and placing in a colony. Later, bodies were made of such size that they would carry twelve of the small frames crosswise, two such bodies being used as a colony.

As a rule, ripe cells are given nuclei.

Late in the season, when the tendency is to feed the cells poorly, sometimes the larvæ are removed from the cups, where they have been fed for two days and replaced with newly-hatched larvæ, at the same time shaving down the cups with a hot, sharp knife. This insures well-fed larvæ.

Mr. Robey imports breeding queens every two years. However, before these are used for breeding they are tested, usually for two years, to guard against introducing any undesirable trait.

Drone mothers, as well as queen mothers, have always been selected by Mr. Robey. It is noted that this point is now receiving much more attention than formerly.

Mr. Robey's experience has been that only the first batch of supersedure cells have proven satisfactory. He has often found the returning mated queen accepted in a queenless nucleus.

Mr. Robey shipped queens to F. W. L. Sladen, in England, twenty years ago. He successfully sent queens to British Guiana, using a 12-hole cage and about one-half pint of bees. The queen was on the road twenty days.

For a number of years orders for the entire output of the apiary were booked by the first of May. In his dealings with the public Mr. Robey has assumed the same attitude as the Pullman porters, which is: "The customer is always right." It is possible he has satisfied some unjust claims, still he believes it has paid in advertising.

Because of the recent sugar shortage and the fact that he annually used 6,000 pounds, Mr. Robey has abandoned raising queens for the trade.

New Egypt, N. J.

The Baby Nucleus

By E. F. Atwater

WHEN the writer was attending high school, nearly twenty years ago, and keeping some bees, and thinking more about the bees than the school, it was his privilege to spend a few days with Mr. Thos. Chantry, at Meckling, S. D., and there saw in use a super divided into four compartments, something like the old Heddon super, in which separators could not be used, and in each compartment were two or more frames of 4¼ sections, and a nice, prosperous little nucleus in each compartment.

Mr. Chantry was very successful with these little nuclei, and succeeded in mating three or four queens, with the same quantity of bees as were usually used in a standard two-frame nucleus.

A year or two later, the writer came to Idaho to engage in beekeeping as a business, and one of the first moves was to establish a number of such nuclei, and these nuclei were seen in operation by Mr. E. R. Root when he visited here in 1901.

Results here, with our cool nights, were unsatisfactory, but with the publication of articles by Swarthmore, Laws, Bankston and others, a careful study was made of the entire matter, and every modification tested, as to size, as to age of bees, etc., and in 1904 a lot of nuclei were in use, folding like the Laws and Bankston nuclei, and containing one 4x5 section, and operated on the same plan of temporary stocking with bees, to be broken up as soon as the queen was found laying and later the same boxes were tested, with one section as before, and an old tough comb, with the cells removed on one side, and waxed in one on the little trays that constitute the hive-sides, giving the bees a chance to cluster between two comb surfaces.

These too, were unsatisfactory. Next, we tried the modified Swarthmore boxes, with two combs, about 4¼x5⅝, and these, too, were finally discarded. Then we built 50 nuclei on the Laws folding plan, with one regular shallow extracting comb, and these were a little better. Later these were changed into three shallow combs to each nucleus, but they were too long for the most economical use of a half-pint to pint of bees, so, as a last test of small nuclei, we adopted the regular standard frame, 5⅝x8, which were originally designed to be fitted three into a standard Langstroth frame, to get frames filled with brood and honey, for stocking nuclei.

D. M. Bryant, of Cliffview, Virginia, in his rosary.

This size proved to mate just about as many queens, per nucleus, as the larger Langstroth frame nuclei, and, where economy of bees is most important, is the best all-round size of nucleus frame.

However, we found that for the practical producer of honey, it is much better to use a nucleus that will hold at least 4 frames, as, if queens are mated, and not needed at once, turn the excluder over the entrance, so they will not swarm out, and given a frame or two, with starters only, when the little nucleus will work as contentedly as a full colony, and build down perfect worker combs. If all beekeepers contemplating the adoption of the small nuclei would adopt those, using the standard baby nuclei frames 5⅝x8, exchange of fine queens, and of select brood for queen-rearing, would be facilitated, as a little nucleus containing one frame of this size can be sent for a very small charge. For some years past the writer has dispensed with the cumbersome plan of fitting the baby nucleus frames into Langstroth frames to secure brood and honey in them, and was the first to devise and publish the plan of fitting a division across a 10-frame shallow super, as illustrated and described on page 92 of the American Bee Journal, 1917, without credit to the inventor.

Such supers are used as stock hives, and one or more colonies are at all times kept in them, from which a frame of brood or honey can be taken at any time.

When we wish to stock up a lot of baby nuclei, we put supers of such frames, filled with comb, on several strong colonies about the yard, give them a quart of feed about every hour, and by night the little combs are nicely stocked with honey, just right for making up nuclei.

Now, as to the reasons why the extremely small nuclei failed here. After all these years I am not sure of my reason, except that the boxes are so small as not to be adapted to the instincts of the bees, and hundreds, if not thousands, of the fine cells and virgins have been lost by these tests, most of which would have mated and been of value if a larger size had been used.

Meridian, Idaho.

Marketing Honey

By J. E. Crane

NOW, that there is a lull in the demand for extracted honey, is a good time to discuss the best way to dispose of our next crop. For those who have little time to market their crop perhaps it is just as well to sell to any buyer who is willing to pay a fair price for it, or turn it over to a reliable commission merchant who makes a specialty of selling honey. But for those who have the time and are willing to put in the work there are better ways for selling both comb and extracted honey. I know of one beekeeper who, although he runs a large farm, with dairy and several hundred hens, has found time to peddle out a large part of his honey, thereby saving shipping cases and freight bills, as well as commissions. Another way that will doubtless appeal to a large number of beekeepers that live near large towns is to put their honey in neat and attractive packages and place in grocery stores for the retail trade. A friend disposes of all of his honey in this way. If the demand is not equal to his supply he has placed a one-comb hive of bees in the store window to attract customers. The amount of honey that can be sold in this way is surprising. Another way, and perhaps the best way where one has a suitable location, is to retail from your own home to those who call for it. The location should be on a much traveled road. Of course, a sign should be hung up in plain sight of the highway, "Honey for Sale." But, better than this is to have the yard of bees set where it is easily seen by those passing. A good friend of mine, who has sold the past season his entire crop of some 10,000 pounds in this way, says his sales have nearly doubled since he cut away the trees between his yard and the road.

This method not only saves railroad freight bills, commissions and shipping cases and crates, but to a considerable extent containers also, for his customers who are acquainted bring their pails to be filled, but to those who do not he feels free to charge for a pail that he fills for them. He takes his surplus almost wholly in shallow extracting frames, extracting a part and cutting out the nicest to sell as chunk honey. He sells the comb and extracted honey at the same price, and his dark buckwheat, when he has it, as some prefer it to white honey.

Another method that has some merit is to put your honey in suitable packages for the retail trade and then travel from town to town and take orders and ship direct to the retail merchants; but the difficulty is that unless you can make large sales rapidly, which is not always easy to do, the expense of traveling and hotel bills will take all the profit over what you could have got from the wholesale buyer or dealer. Still another way is to put your honey in the most desirable form and let the wholesale grocery house, who has a large number of agents on the road, take orders and send them to you to ship direct to the retail merchant. If this method were very generally followed it would seem as though every retail store in the country might in a few years be supplied with honey. Of course, suitable literature and advertising matter should be supplied to those taking orders.

But how shall extracted honey be put up for the retail trade? This will depend much on the section into which it is shipped and those who consume it. A large demand is coming from restaurants, hotels and dining cars for individual packages holding

from two and a half to three ounces.

There is likely to be a large trade in this line in the near future if sufficient effort is made to develop it. Then there are those that want more than enough for a meal for one person, and a five-ounce, an eight-ounce and a fifteen-ounce package are needed, that the whole family may have not only a taste, but a full meal of it, with their bread. We put up honey in three sizes of glass, and three sizes of fiber, that can be sold for a little less than a glass. Then we have quarts in tin, and half gallons and gallons, as well as five-gallon cans, and have calls for honey packed in all of them.

By the way, one of the best methods of advertising is to put up under your trademark only a nice grade of table honey. There seems to be a feeling in many places that honey should be slightly amber and it may often be advisable to mix a small per cent of good-flavored amber with a very white honey to reduce the color a trifle, but care should be taken that it is not carried too far, and injure the quality and reputation of the bottler. The reputation of a beekeeper or a bottler is of much greater value than all that can be gained by reducing the standard of your goods, when once you have a reputation established.

What shall we say of comb honey? With sections costing nearly a cent a piece, and a piece of foundation large enough to nearly fill them, the best part of another cent; then with a carton to cover the comb another cent is required. But this is not the end, for we must have shipping cases that add another cent to each section, and a crate in which to ship our cases costing not less than half a cent more per section. The greater amount of work required to produce the comb honey, and greater amount of labor to pack it, will make it quite necessary that we secure a much higher price for it than for extracted honey to make it pay. The law that compels us to weigh individual sections and place the net weight on each section or carton, adds very much to the expense of packing. But there are some advantages in this, as it makes it possible to pack all the sections of the same weight in a given case. It is very easy to see that the retail grocer will prefer all his combs of the same weight and be willing to pay a little more when so packed. Again, there are some who want every section to look heavy and will pay more for fourteen or fifteen-ounce net sections than for lighter ones, while others are not particular, and some retailers are even willing to pay more per pound for the light sections. Plain sections weighing eleven ounces net look very well if no heavy ones are in the same case to compare them with, and sell very well. With the present craze for producing extracted honey, I believe the price of section honey is going to rule high for some time to come, and pay well those who are willing to produce, pack and market it with care.

DR. MILLER'S ANSWERS

Send Questions either to the office of the American Bee Journal or direct to DR. C. C. MILLER, MARENGO, ILL.
He does NOT answer bee-keeping questions by mail.

Outdoor Wintering

A few days ago I talked with a beeman and he told me he never packed his bees, but just left them on the stands as they are in the summer. He argued that when bees are kept too warm in winter they use up their stores and are without in the spring before time to gather more. He says his bees are doing fine. What do you think of this? ILLINOIS.

ANSWER.—I don't know how far south you are, but there are good authorities who say that anywhere in Illinois the bees are better off for protection. A strong colony may winter without it, but that doesn't prove that the colony might not do better still with it.

Queens—Italians, Etc.

1. If the queen should be killed on her mating trip would the colony likely be queenless, since this queen very likely destroyed all the other queens before starting forth?

2. If I have no bees in my apiary except pure Italians and there are no neighbors' bees within one mile, is it not certain that my queens will become purely mated?

3. Have you had experience with the various strains of Italians, as three-banded, leather-colored and goldens? fI so, which would you advise for gentleness and industry? ILLINOIS.

ANSWERS.—1. If swarm should issue, leaving in the hive no queen or queen-cell, and no young brood, the death of the queen would be the doom of the colony. But you are not at all warranted in saying "since this queen very likely destroyed all the other queens before starting forth." That's just what she is never allowed to do. When a prime swarm issues, young queens are always left in their cells, and plenty of young brood from which young queens may be reared. In the case of an afterswarm there is a virgin queen, and if the workers don't allow her to destroy all her royal sisters in their cradles she issues with a swarm. If they allow her to kill them, there will be no swarm. In brief, there is never a swarm without a potential successor to the queen.

2. Not half of them are likely to be purely mated.

3. You seem to class three-banded as separate from leather-colored. Pure leather-colored Italians are three-banded, and three-banded may or may not be leather-colored. As a rule I should prefer leather-colored three-banded Italians to any others.

Propolis, Supers, Etc.

1. What is it that bees use to stick so tight everything in the hive?

2. When a swarm comes out it is with the old queen. Is it old bees that come out, or is it young bees that come out with the old queen?

3. Is it a good plan to put on hive supers with full sheet foundation soon after new swarm is put in hive?

4. Is it much trouble to use bee escapes?, and will all the bees go down from super into brood chambers, as it is claimed they do?

5. How much is saved in the way of comb-foundation by extracting?

6. If bees were put in a goods box that would hold 10 bushels, would they swarm before they filled the box? and would there be more than one queen in it about the time it was full?

7. Is the honey in brood-chamber over super full of honey enough for the bees in a colony to winter on?

8. Do the bees in the super winter in the super, or do they all go into brood-chamber to winter? TEXAS.

ANSWERS.—1. It is propolis, or bee-glue, mostly gathered from trees, but also from old hives in which there are no bees.

2. The bees of a swarm are of all ages, from the oldest to those that are barely able to fly.

3. Unless an excluder is used, no super should be given until the queen has made a start at laying in the brood-chamber, lest the queen begin laying in the super.

4. It is no great trouble to use them, but you cannot count on their always getting out all the bees promptly. Yet those who use them are quite generally satisfied with them.

5. Nothing the first year; but after the first year you save all the foundation used in sections.

6. Occasionally they might swarm, but they would have a new queen every two to four years, whether they swarmed or not.

7. Yes, and there might be enough without the super.

8 Generally they winter in the brood-chamber, but some, or even all, may be in the super.

Queen-Cells

On page 189, in the book "One Thousand Answers to Bee Questions, "How to Rear Queens on a Small Scale: "When the colony swarms, hive the swarm on a new stand, leaving the mother colony strong. About a week after the issue of the swarm go to the hive each evening and listen for the piping of the young queen. After you hear her, go the next morning and cut out all the cells." Now, it stops before it tells what to do with the cells that he has cut out. Please tell me how to proceed with the work. Will these queen-cells be found in the mother colony or the swarm that came out? NEBRASKA.

ANSWER.—After the cells are cut out they are generally put in the nuclei, although they may also be used in full colonies. To tell all about rearing queens would exceed the limits of this department and make a book of itself. Indeed, an excellent book has been written on the subject by Frank C. Pellet, which you will do well to get.

The queen-cells will be found in the parent hive.

Foulbrood—Transferring

1. I am sending to you a sample of some comb and brood that I have taken out of a hive. I would like to know if those cells that are sunken are foulbrood. You will notice that some of the brood is good. I bought this swarm at a sale last fall and they were in a common goods box. I have now placed them in a 10-frame hive with full sheets of foundation. The swarm is very small and not much honey; have been feeding all spring. If it is foulbrood, what would you advise to do? If it is not foulbrood, would you advise requeening, and when?

2. I have another swarm in a 10-frame hive that is extra strong. They have a very prolific queen. They have at least one-third of each frame full of brood. I am thinking of taking one or two frames from them with brood and giving to a weak colony, and replacing with full foundation sheets. What I want to know is when I take out the frames of brood, should I leave what bees cluster on the frame and put all in with the weak colony? Or should I brush off the bees and put in only the brood?

3. I have a swarm in an 8-frame hive that I bought. They had no foundation sheets and the combs are not straight with the frames. I am able only to take out one frame. They

have plenty of honey and young brood. But I want to put them in a 10-frame hive with full sheets of foundation. Would you advise putting them on top of a 10-frame and driving all bees below and placing on a queen-excluder, between the two hives? If I do this, could I save the young brood, and how long would it be before I could remove the old hive free from brood? Would you advise some other methods? MISSOURI

ANSWERS.—1. I don't discover any evidence of disease in the samples sent. If at any time you think you have diseased brood, send a sample to Dr. E. F. Phillips, Department of Agriculture, Washington, D. C., and in case there is disease he can tell you about it better than I can. If the queen fails to keep the combs properly filled with brood, it will be well for you to supersede her as soon as convenient, unless the bees beat you to it buy superseding her themselves

2. It will be better to give with the brood the adhering bees, unless the weak colony is so weak that the added bees should outnumber the bees of the weak colony. In that case exchange one of the combs of the weak colony for one containing as much sealed brood as possible, brushing off all bees.

3. Your plan will work all right if you can drive the bees down; but it is easier to drive bees up than down. You might drive the bees up into the desired hive, then place this on the stand and put over it the excluder and old hive. In three weeks all worker-brood should have matured.

Partnership, Etc.

1. A and B go into beekeeping as partners. A does all the work. B furnishes $300 of the $400 capital invested. The stock this spring was 30 colonies of bees 20 empty hives and supplies for this summer's crop. What would you consider a fair part for each?

2. Since A does the work, what part should he have of the coming crop?

3. Do drone laying queens and fertile workers lay only in drone-cells, or may drones be reared from worker-cells?

4. Why do bees sometimes construct hard cups resembling a started queen-cell? I have often seen them when there could have been no impulse of swarming.

5. Are you familiar with a honey plant known as spider plant—or spider weed? What is its value?

6. Is there an association of beekeepers in Virginia. If not, give me the name of some one who could give me information about the forming of such an association. VIRGINIA.

ANSWERS.—1 and 2. One fair way would be for B to have a certain rate of interest on the capital invested, that rate being high enough to cover any risk there might be in the case.

3. Drone-laying queens lay in the same kind of cells as other queens, and the drones they produce in worker-cells are small in size. Laying workers prefer drone-cells, but also lay in worker-cells.

4. I don't know. Maybe they think it a good plan to have a start in case it should be needed.

5. Some years ago it had quite a boom and I planted a patch of it. It is a good honey-plant, but not worth keeping on cultivated ground.

6. I know of none. Perhaps Chas. A. Reese, State Apiarist, Charleston, West Va., can help you out.

Stingless Bees

I want to ask you a question. Is it true they are trying to raise or breed bees without stings and with longer proboscis or suckers, so as to be able to take honey from red clover, etc.? NORTH DAKOTA.

ANSWER.—There are stingless bees, but they will probably never be commercially useful, and I do not believe any serious effort will ever be made to have honeybees without stings.

There is a difference in the length of bees' tongues, and some effort has been made to breed longer tongues. Not much, however, has come of it. To me it appears that the more hopeful field lies in the direction of breeding red clover with shorter tubes, so that the common bee can reach the nectar.

Queen Leaving Hive

The other day I found the queen from one of my colonies out on the grass in front of the hive and another queen I found up under the cover of the winter box. Both colonies seem to be in good condition and quite strong. Could you tell me what would make them come out at this time of the year? MICHIGAN.

ANSWER.—Hard to tell. It is possible that the old queen was superseded and was cast out. There is another possibility. The old queen might have been superseded and more than one queen reared to take her place, and the queens you found were extra young queens; but I do not guarantee either of these guesses.

Uniting—Laying-Workers—Honey Plants

1. Can you unite two weak colonies without fighting?

2. I had a nice, strong colony of bees at the end of March this year, and now they are very weak. I looked into them and there were a lot of eggs in the cells and some cells had two eggs. They have no queen. I don't know whether they swarmed or not. They had no sealed brood. Do you think that they are laying-workers?

3. Have the bees got a special worker-bee that lays the eggs?

4. Do they have to be mated, or how does it come that they only rear drones?

5. I gave them two frames of brood, sealed, and one with eggs. Will they build some queen-cells out of the brood if they have no queen?

6. I also gave them a lot of bees out of the hive from which I had taken the brood. Do you think they will stay and help build up the colony, or do you think that it would be advisable to unite them with some other weak colony?

7. I have only 35 colonies of bees and there are only two weak colonies in it; all the rest are very strong. I got 25 18-frame hives and got some supers on some of them; robbed them the first of May. Don't you think that is pretty early for this year?

8. How does it come that they don't class the saw palmetto as a honey-plant? Is not that the main flower down South for producing nectar? They did not mention it in the last Journal on Southern honey-plants.

9. I have a strong colony that is always fighting. I think that there are robber bees that try to get in, but they are killed. This goes on day after day. How can a fellow stop them? I did not expose any honey or anything sweet about. The colony is just loaded with brood. They mave a fine queen and quite a lot of stores, but not enough to take any out. Some colonies averaged 50 pounds surplus so far this season; mostly palmetto honey. FLORIDA.

ANSWERS.—1. Yes, by taking proper precautions. One way is to put a sheet of common newspaper over the top-bars of one hive and set the other hive on it. The bees will gnaw away the paper and gradually unite withiut fighting.

2.It looks very much like a case of laying workers.

3. No. A lot of workers are engaged in the miserable business.

4. No, there is no mating. All drones are reared from unfertilized eggs, whether the eggs be laid by a queen or a worker.

5. They may and they may not.

6. The older bees that you gave them will return to their old place; the younger bees will stay. The probability is that it should be better to unite them with another colony having a good queen.

7. Likely; but I do not know much about it.

8. The palmettos were described at length in the December number of this journal. They are good honey-plants.

9. I do not know. It hardly looks as if robbers would try day after day to enter a strong colony. It looks rather suspiciously like a case of paralysis.

Queen Breeding, Frames, Etc.

1. When running for extracted honey and using a story and a half brood-chamber, would it not be a good idea to have the top story of the 10-frame size and the bottoms half-story and the bottom-board of the 8-frame size? Would the side ventilation be too great?

2. Would you advise commercial queen-raising to one who has a great desire for it?

3. Which do you use in sections, thin or extra thin super foundation, and which is the best for brood-frames?

4. What is royal jelly composed of? Is there any substitute for it?

5. Do you think a 13-frame Jumbo hive too large a brood-chamber for a Dixie beekeeper?

6. Do you keep any bees now, and could you supply one with a breeding queen now?

7. Do you know of a breeder who breeds your stock for sale? VIRGINIA.

ANSWERS.—1. The ventilation will be none too great in hot weather, but would be too great early in the season. You can, however, remedy this by tacking on strips under the 10-frame body.

2. A little hard to tell; but the "great desire" would certainly be a helpful factor.

3. Thin super and medium brood.

4. The bees prepare royal jelly the same as the jelly first fed to all young larvæ, from honey and pollen. There is no substitute for it.

5. Probably not.

6 and 7. I keep bees now, but sell no queens. You can get Miller queens from the Penn Co., Penn, Miss.

Clipping, Swarm Prevention, Etc.

1. Does clipping the queen's wing prevent swarming?

2. If I have two hives containing Italian queens, how can I Italianize my apiary from them next spring?

3. On hot days, is it advisable to raise the top for ventilation?

4. How do you prevent swarming?

5. Suppose I have 8-frame hives. I will take two frames of brood and bees out of each of the first four, then move No. 5 to another stand and put my newly-made swarm in its place. Will my new swarm be strong enough and will it weaken the others enough to prevent swarming? TEXAS.

ANSWERS.—1. No. It prevents the queen going off with a swarm, but does not in the least prevent swarming.

2. One way is to rear queens from them and with these to supersede objectionable queens. Another way may suit you; when the colony with the Italian queen swarms, put the swarm on the old stand and put the Italian colony in place of one of the dark colonies. In a week or so the Italian colony will swarm again, when you will put the swarm in its place and put the Italian colony in place of another dark colony. Do this as often as it swarms, each time putting the Italian colony in place of a dark colony and setting the dark colony in a new place. In this way each swarm will have an Italian queen.

3. It will do good, but it is rather too much work to change the ventilation at each change of weather. Better provide abundant ventilation permanently.

4. It would be a long story to give all the ways which you will find given in my book, "Fifty Years Among the Bees." Perhaps I might say that most frequently it consists in leaving the colony ten days without any egg-laying.

5.Your new swarm should be good, but unless you take away nearly all the brood from them it will not prevent them from swarming.

Scorched Honey

1. A lot of my bees died this winter and last winter, two years. I have fed some honey from a sun capping melter; it is dark and not

fit for sale, and I am now blaming that for killing them in the cellar. Some of the hives are spotted. I ask your advice.

2. I have granulated combs from dead hives. Will bees clean them up when I put them in light hives, when I take them out of the cellar in the spring? Tell me what is best to do with them? Should I melt them up with water for fall feed? ONTARIO.

ANSWERS.—1. It is possible that your bees had diarrhoea without the honey being to blame. But scorched honey is death to bees in winter, and it is possible that was overheated in the melter.

2. The bees will clean them up more or less thoroughly, and it will help them if you occasionally spray the combs with water.

Diseased Brood—Dead Bees

1. After going through my bees I found some diseased brood that has got me "up a tree." Out of my 45 hives I found about 4 that had it. It is not American foulbrood, and I don't think it is European foulbrood, for the reason that it kills but few larvæ in each hive. The dead larvæ lie lengthwise in the cells in a melted form. There is no roping; the color of the larva is light, with a black speck on its head. I was talking to a beeman who keeps about 1,000 hives and he thought from my description it was the so-called "pickle brood."

2. I have a few supers that have been over hives that had mild cases of American foulbrood. The combs have never been used for brood and they are clean of all honey. I was told by an experienced beeman that they ought to be safe to use. What do you think?

3. Do you think I can get as good queens here in California as I can in the east?

4. I noticed an unusual amount of dead bees in front of one of my hives this spring. What causes this? I also noticed a few hives that had taken fully-developed brood out of the cells and dropped it in front of the hives. What causes this? Do you think it was chilled while being examined a few days before? CALIFORNIA.

ANSWERS.—1. Send a sample of the brood to Dr. E. .F Phillips, Department of Agriculture, Washington, D. C., and he will inform you as to the trouble and the remedy. If you write to him in advance he will send you, without charge, a box in which to send the brood and also a frank with which to pay the postage.

2. They are probably entirely safe to use again for surplus, with not one chance in a thousand of any danger

3. I don't know any reason why a queen reared in California should not be as good as one reared elsewhere, if reared from the same stock.

4. I don't know why the unusual number of dead bees. The dead brood carried out might have been from chilling; it might have been from starvation; it might have been the work of the wax-worm, or it might have been drone-brood that the bees did not wish matured.

Big Cover—Winter Killing

1. I would like to know what tne advantages are of the large cover that the Dadants use on their hives, and why would not a super do just as well for winter packing?

2. Will you tell me some reasons for a colony of bees winter-killing when they were in a good hive and were all O. K. last fall with plenty of bees and stores, and considering such a mild winter. ILLINOIS.

ANSWERS.—1. One advantage is that the cover is larger than a super, and so allows the hive to be covered more warmly. Possibly another reason is that in the first place all covers were of the telescope order, and there never has seemed sufficient reason for making a change.

2. The mild winter may possibly have killed them. You say they had plenty of stores in the fall, but don't say how it was in the spring. The unusually mild winter may have made them fly more than usual, thus using up all their stores. They may have been queenless. They may have had dysentery. There might have been some other trouble.

Bottom Starters—Dandelions

1. In using a 1-inch starter at the bottom of the brood-frame, how much space should be left between the starter and the upper sheet to allow for stretching in order to secure full frames? Standard Langstroth frames.

2. Can bees make a living from dandelion? If not, are there any flowers on which they can before fruit bloom? In northwestern Pennsylvania, I mean.

3. Is the common white daisy a honey-plant?

4. In putting a 4-frame nucleus in a 10-frame hive using six full sheets, is it necessary to use a dummy and increase it gradually? If so, why? PENNSYLVANIA.

ANSWERS.—1. Anywhere from one-eighth to one-fourth inch. But an inch bottom-starter will topple over unless supported, and a much smaller starter is in danger of being torn down by the bees, unless in an upper story.

2. Yes, dandelions are plentiful enough in many places to afford bees a good living during their season.

3. I don't know. I think not.

4.It is not necessary; but it may be a help by saving the heat

Moving Bees

Will you kindly state in the American Bee Journal the various times in the year, in the order of preference, for moving bees by railroad 200 to 300 miles? PENNSYLVANIA.

ANSWER.—Likely the best time is early in the spring, before the combs have become heavy with brood and honey. From that the time will constantly become more objectionable until the middle of the harvest. Better than some of these days, probably, is the time when brood-rearing ceases in the latter part of the season, but not too late for a flight after the journey. To put all these different times in the exact order or their preference is a thing for which I am hardly competent.

Foulbrood

1. Will it cure foulbrood to put the old brood-nest over a clean hive with a bee-escape in between?

2. Can a man who claims he never heard of foulbrood, and has a colony that he never looks in himself, be made to clean it up?

3. Would I be safe in buying hives that bees died in three years ago, of foulbrood, if I boil them out good? I am speaking of American foulbrood. WISCONSIN.

ANSWERS.—1. It might in some cases of European.

2. Yes, in those States where the law requires it.

3. Some very good authorities think it entirely safe.

Purity—Cross Bees—Entrances

1. I have considerable trouble trying to ascertain whether or not my bees are pure. I notice that some of them are golden color and some below the three-bands are very black. Is it possible for bees to have three distinct bands and yet not be pure? Can you state what is an infallible mark of purity?

2. Occasionally my bees become very cross, to the extent even, that I cannot walk out among the hives without having several of them chase me about and even follow me some distance away. At other times they will be very docile, even allowing me to handle them without smoke. What do you suppose is the cause of this difference in their temper?

3. I am giving my bees as much space at the entrance as possible, having taken away the entire entrance blocks and leaving a space all the way across the hive of about an inch. Is this too much space at the entrance? Could this large space have anything to do with their being cross at times? Would this big entrance help to start robbing while a heavy honeyflow is on? ALABAMA.

ANSWERS.—1. Yes, a worker-bee may have three bands and yet not be pure. A colony of mixed blood may have some workers with three bands and some with less, and in such a colony I suppose the worker with three bands is of no purer blood than one with less. But if all the workers of a colony have three bands, the colony is counted pure blood. Yet in a colony of pure blood you may find impure workers that have entered from other colonies.

2. Bees that are busily storing a heavy flow are on their best behavior, and a sudden stop in the flow may make them cross.

3. My bees have an entrance two inches deep the whole width of the hive, and it seems none too much. I don't believe it has anything to do with their being cross, nor would it start robbing in a heavy flow.

Equalizing Brood

Have you ever changed your mind as to the advisability of taking brood from the stronger and giving to the weaker, to equalize colonies in spring? Is it not well to break up the weaker altogether by giving their brood and bees to the stronger and making increase later, where valuable queens would not be discarded? WISCONSIN.

ANSWER.—Up to the present I have never had occasion to change my mind on the subject, nor to have any sort of question about it. But when a man of your experience raises the question it is time to give the whole matter at least thoughtful consideration, whether I change my mind or not. So I have given a pretty good think to it. Especially I have thought over the hundreds of cases in my own experience through many years, and I cannot recall a single case in which I thought the plan was not a good working plan, always having regard to certain restrictions, especially not to reduce any strong colony to less than four broods, and to help first the strongest of those needing help.

Of course, I can imagine a case in which it would not be advisable to try to bring up all the colonies in the apiary to good working order. If in an apiary of 50 colonies there was only one strong colony and the rest were the flimsiest of weaklings, equalizing the whole would only result in failure to get any crop at all; whereas a small number might be made to yield at least some surplus. The others might be doubled up to save the bother of fussing with them. (Even then, if they are dwindlers, as G. M. Doolittle has pointed out, the doubled-up dwindlers will be dwindlers still.)

But such a case is so much out of the common as not to be fairly considered. Suppose we have two colonies, one with 3 and the other with 5 brood. Left to itself the weaker one will make very slow progress; but if a frame of brood be given to it from the stronger it will be in condition to walk right along increasing in numbers, and the benefit to the weaker will overbalance the harm done to the stronger. Suppose 5 of the 50 colonies in an apiary are weak. It would simplify matters to unite these 5 with stronger colonies and get them out of the way. But if we let them alone till all the others are made strong ,we can then, at a very little expense to any of the stronger colonies bring up the 5 into serviceable condition, and get a little larger total crop than if we had doubled up the weaklings. At any rate this plan has worked out so well for me that as yet I see no good reason for changing it; yet it is not always wise to be too positive.

To Cement Paper on Metal

Dissolve dextrine in warm water; take 20 parts of glycerine, 10 parts of glucose. Apply this mixture to your paper, then rub metal well with a piece of an onion, then apply to metal.

This is an old recipe, but I have never tried it. Let the readers of the American Bee Journal try it and report results.

BRO. ALPHONSE VEITH, O. S. B.,
St. Meinrad, Ind.

Introduction of Virgin Queens

By J. F. Diemer

THE introduction of virgin queens is a hard nut for many beekeepers to crack, probably because it is not practiced to any great extent. The oftener one does a certain kind of work, the more efficient he becomes.

Introducing queen-cells is very much easier, but even then it is necessary to take a look-in, to see whether she is hatched, whether she has all the limbs that belong to a perfect queen, for she may have imperfect wings, and in that case would only be a drone-layer. Also the careless handling of the queen-cell may kill the young queen in it.

If they are allowed to hatch in the nursery cage, the poor ones may be sorted out and only the good ones used.

The nursery cage which I use is so arranged that the bees have free access to the queen-cells at all times. The cages are made of woven wire. At the bottom is an opening, made from a queen-excluder fastened to the wooden plug that closes the lower end of the cage. When removing the cage, a slight turn closes the hole, confining the bees in the cage, 10 to 20 of them, with the queen. These are introduced with the young queen and, I believe, help the safe introduction of her majesty.

Five different conditions may exist in the queenless nuclei or colonies where a young queen is to be introduced, as follows:

No. 1. Bees only.

No. 2. Bees and eggs only.

No. 3. Bees, sealed brood and queen-cells.

No. 4. Bees, eggs, unsealed brood and sealed brood.

No. 5. Bees, eggs and unsealed brood only.

The time the queen is to be confined in the cage is regulated by the amount of candy in the tube. The tube I use is 2 inches long and one-half inch in diameter, and if it is full, it takes the bees 48 hours to eat it up and release the queen.

In introducing a queen to Nos. 1, 2 and 3, I take all the candy out except a small amount, because it is easy to get these colonies to accept a queen. Time is 4 to 6 hours.

The queen-cells should be removed from No. 3.

No. 4 is all right after 48 hours. No. 5 is the hardest to deal with, especially if it has 3 or 4 frames of brood, and the bees are old and crabbed. If their brood is removed and sealed brood only given them, they will accept a virgin in 48 hours.

If introducing either a virgin or a laying queen, it is very important that there be no robbing, or excitement. I lose very few virgins, because I do not try to introduce them when there is the least excitement.

It is not best to try to introduce old virgins, as they are too anxious to leave the hive for their wedding flight.

Liberty, Mo.

How Exports Affect the Honey Market

Adequate Packing a Necessity—A Prospectus of Honey Prices

"FOREIGN importers will no longer tolerate any such packages as have been shipped in the last two years, as the loss of honey packed in cans and cases has been tremendous, especially so on goods shipped early in the season, when the honey was liquid."

This is the statement of one of the leading export commission merchants of New York City. Criticising our American methods of packing honey, he continues: "We are sufficiently experienced in this line to know that radical changes must be made in the packing of American honey for exportation. If the business is to be promoted, the present packing of honey for export is absolutely unsatisfactory."

In view of the fact that many authorities agree that exportation of honey is keeping up the present high prices, more so than domestic demand, this advice from so high an authority is pertinent. The commission merchant mentioned estimates that not one single importer in Italy made a profit on the importation of American honey, in spite of the fact that all this honey arrived in Italy on a strong advancing market. The loss in revenue was due to the loss in transit, this in turn being the result of improper packing.

This same authority advises that second-hand cans and cases should not be used for export. He advises everyone to pack American honey in cans and cases for export so that foreign countries will want to buy here always, instead of only when they have to. The placing of corrugated paper in the bottom of cases as well as at the sides is advised. It is estimated that the ends and center partition of all honey cases intended for export should be made of not less than seven-eighths-inch lumber, and the top and bottom of not less than seven-sixteenths-inch lumber. On all cases the use of iron straps and the nailing of these straps is advised. This makes a substantial package. It can be easily opened, as it is necessary for exporters at the seaboard to sample 10 per cent of all such honey.

An importer in London advances the information that 6,000 tons of honey held in Australia for lack of freight room is now coming on the London market. He advises that England will give preference to buying from her own colonies, especially with freight conditions becoming normal.

Reliable information indicates that towns on the coast and most large producers have cleaned up on last year's honey crop. However, a number of wholesale grocers throughout the country have on hand from one to two carloads of honey purchased last October in anticipation of a sugar shortage. These factors will have a vital bearing on the demand and price of honey next fall. They may well be considered by every commercial producer of honey in the United States.

Certificates for Beekeepers

I have read with interest the work of the bee clubs and what they are doing for our young people. In the bee club the prize goes to the one who produces the greatest surplus, while there may be a better beekeeper, in a worse location, who can never aspire to the first rank. There is a system in vogue in Ireland that meets with great success, and that is of granting certificates of competency after an examination, to those who can pass the tests. There are two grades, the higher being the experts.

I would suggest that the American Bee Journal issue certificates having set tests for the two grades, and appointing reliable "experts" to see the tests carried out. There would also be a written test to see if the student knows the underlying principles of the art.

A good test for the lower grade would be the transfer from box or skep to hive in one operation, and for the written part questions dealing with age of queen, drone and worker at different stages of their development.

The examination for the higher certificate would be much stiffer, going into bee diseases, etc. One test I know was to take three queens from three hives and then replace them without having let go of them at all during the operation; one queen had to be held in the lips to successfully get through this test.

However, the main object was to get every beekeeper striving first for ordinary proficiency, and later on he or she is sure to want to be an expert.

This system can be made to reach all, while only the favored few can attend the college courses and get the instruction so badly needed to stamp out foulbrood. Again, anyone who has bees and cannot, or will not, mind them can thus get some one who, they know, is capable to look after them, either for pay or on shares.

Beekeeping is very much like what

the Irishman said about drinking whisky, "not so much an education as it is a gift."

North Lonsdale, B. C.

Microscopical Studies

IN the American Bee Journal for February, 1919, Dr. Brunnich, of Reuchenette, Switzerland, offers an interesting explanation for the **rectal glands of Chun,** both regarding construction and function. Their historical features permitted him to conclude that they are possibly concerned with the excretion from the blood of excessive water absorbed through the lining membrane of the honey sac from the nectar gathered, and that they appear to be capable of double filtration. Developing this idea, one may consider them, so to speak, the "kidneys" of the bee, which indirectly help in concentrating the nectar during its transformation into honey, and directly aid in "washing" the blood. Supposing this explanation is correct, it would be feasible to presume also that an additional benefit from the dilution of the blood is to raise its pressure, and thus help the bee to carry her load to the hive, since a higher blood pressure would presumably aid the bees in her heavy flight. Following this line of argument, it is feasible again to suspect that probably some irritation, or lesion of these glands occurs in the pathological **diarrhoea** of bees, and that by excessive secretion of fluid the blood pressure is abnormally lowered, indirectly causing disability of flight. The apparent **dislocation of the wings** might be either accidental, from fruitless attempts at flight, apart from being a sign of debility in old bees which are not otherwise diseased, or might be the result of loss of muscular tone, and partial nerve paralysis, resulting from metabolic toxaemia. The same theory of blood pressure which I suggest would hold equally well with normal, but chilled bees that are unable to fly. Since the blood pressure is dependent on the rates of the heart beat and respiration, apart from the volume of the blood, and since the rapidity of these rates is governed by temperature, it follows that the blood pressure of a chilled bee is bound to be low. This theory is further capable of explaining certain phenomena which I shall incorporate in my "Notes on 'Isle of Wight' Disease" in the British Bee Journal.—A. Z. Abushady, in British Bee Journal.

Paste for Tin

We have tried many things to make a paste that would always stick on tin. Here it is. This was given to us by a traveling man for the Standard Oil Co., who told us it is what they use, and you know their labels stick. The proportions as given here are for small quantities; you may use more starch to make the paste thicker, but this is about what we find right for general use:

Take two heaping teaspoons of corn starch and dissolve in a small amount of cold water. In another vessel dissolve one teaspoon of Lewis lye, or any good concentrated lye, mix with the dissolved corn starch. If this makes the starch too strong of lye, it can be reduced, but if too little is used the label will not stick to the tin. If too strong, it may turn the label yellow. When thoroughly mixed the paste is ready for use. Apply paste to back of labels with a brush or cloth. If labels wrinkle when putting them on, wet both sides with water, so they are thoroughly dampened, before applying the paste. This is a good paste for anything to which paper is to be attached.

J. R. SANDERSON.

Yellow Jackets

In the March number of the Bee Journal someone in the State of Washington expresses a "wish to learn some way to help the bees to handle yellow jackets." Dr. Miller's advice is excellent, but, unfortunately, we cannot always keep every colony strong, and it is very difficult to find all yellow jackets nests.

Two years ago we had a scourge of yellow jackets in this locality and some lost whole colonies of bees. Last year we had comparatively few. I heard of no one finding and destroying the nests. Following is the plan adopted by some of us very succesfully:

Get fly traps, the kind made of wire netting, where the insects enter at the bottom and cannot get out because they fly upward, where there is no escape. Get a large one—they are made a foot and more high. Put a bit of meat or fish in the trap and set it out and the yellow jackets will flock to it. When it is full of yellow jackets, put it in boiling water, empty it and reset it. One person told me she had to empty hers twice, and even three times a day, and it was a large trap.

EMILY D. SMITH,
Los Gatos, Cal.

Inspection in Michigan

Two acts, which are of interest to Michigan beekeepers in particular, have been passed by the recent Legislature. One makes certain changes in the law relative to quarantining of diseased districts and the other being an appropriation of $10,160 for carrying on the work of the office of the State Inspector of Apiaries.

The appropriation bill was passed as a budget bill and specifies that the State Inspector and Chief Deputy shall serve throughout the year. Other deputies are to be used only during a part of the spring and summer. The corps of men have already been selected for the work and will begin their duties on July 1. It is unusual for an inspector to exercise any of the authority which has been conferred upon him. When authority is needed, he has all that is necessary. It is the understanding of all inspectors that their duties are to be beneficial to every beekeeper with whom they come in contact, to encourage better methods of beekeeping, to encourage intelligent beekeepers to increase their number of colonies, to stimulate local organizations and field meetings, and in general to do everything in their power to help build up the industry. When law enforcement is the obvious duty, then the law is enforced without the assistance of constable, sheriff or any other officer who doesn't know a bee from a yellow jacket. We are now enforcing the law against box hives and other nuisances in which bees are sometimes kept.

During the coming year we will have several short courses given jointly by the College and the office of the State Inspector. County beekeepers' schools will be continued, and within the year every county having a beekeeping industry will be visited. Publications will be continued, and it is hoped to enlarge somewhat upon the Beekeepers' Letter. We shall continue to co-operate with the State Beekeepers' Association, for it has shown itself to be a power for good among Michigan beekeepers. The distribution of Italian queens for the control of European foulbrood will be tried out in a small way this summer. Field meetings and demonstrations started in May and will continue all summer. Appeals for individual help with disease will be cared for as heretofore. Our present law is broad enough so that it is possible to cover any activity which is really beneficial to the industry.

B. F. KINDIG.

Queen Lost in Mating Trip

In the answer given by Dr. Miller, on page 238, on the above subject, to the second enquirer, the doctor probably misunderstood the question, for there are numerous instances in which the bees have no resources left in the matter of brood or young queens, when the virgin queen is lost in her mating flight. The first queen hatched usually destroys the others, unless the colony wishes to swarm again, when the bees prevent her from doing so.

The only remedy to apply when the queen gets lost in her wedding flight is a new queen or a queen-cell ready to hatch. Every queen breeder watches closely the colonies that have queens to be fertilized.

New York Field Meets

A field meet of the Western New York Honey Producers' Association is to be held July 26, at the home apiary of Adams & Myers, Ransomville, N. Y. Another meet, of the New York State Association of Beekeepers' Societies, will be held August 1, at the home apiary of Deroy Taylor, Newark, N. Y. If it is possible for some one of the American Bee Journal staff to be present, he will attend both of these meets.

Southern Queen Breeders Swamped

The queen-breeders of the South probably never had as busy a season as this. The weather has been extremely unfavorable for shipping bees, on account of numerous rains.

Yellow Jasmine

Your editorial in the May Journal on "Does the Yellow Jasmine Poison Bees?" just read. In regard to same shall say that this is my first season near the Atlantic coast of North Carolina, where the yellow jasmine is found abundantly, in fact for three weeks it was our only source of nectar during April. The last blossoms are now disappearing. Mr. F. S. Johnson, of Mt. Airy, N. C., was with me lately and we noticed many bees dying in front of the hives, many being young bees. I had noticed bees dying similarly in the Piedmont section in former years, with the difference that formerly it seemed to affect old bees. The disease, or trouble, has about disappeared. I think at one time enough bees died to seriously affect the strength of a colony. Jasmine honey is amber colored and is yielded in quantities to aid brood-rearing largely.

The spring here has been very backward, with killing frosts on April 26. Flowers yielded no honey for a week or more after it.

We are now in a great flow from blackberry and cotton gum (a tupelo), with gallberry about to open. Our winter was very mild and few bees were lost.

Another fact on jasmine honey. I was surprised to find last week that one colony that had much more honey than any other is headed by a hybrid queen, mismated, making her bees almost black. Whether they are immune to the poison, as indicated by Mr. Brown, or this just happened, I can't say. This was a very weak colony earlier in the season.

BRUCE ANDERSON.

Death of Dr. McCray

Just as we are going to press we learn of the death of Dr. A. H. McCray, which occurred Saturday, June 14. Dr. McCray, together with Dr. G. F. White, will be remembered as author of the Department Bulletin "Diagnosis of Bee Diseases by Laboratory Methods. Dr. McCray had lately been director of the Laboratory of Hygiene of the State of Montana and was conducting investigations on the spotted fever. It is believed he contracted this disease during his studies. Particulars will follow in our August number.

A Drone-layer

Finding a queenless colony in which a drone-layer had developed, I wanted a quick, easy and certain way to separate the bees from the criminal, so proceeded as follows:

On a piece of board which effectually closed the entrance of the hive I put a small wire bee-escape, open-out; then from another hive took a frame of brood and put it into a hive with three other frames and a tight division-board and set the hive with a 3-bee entrance almost in contact with the cone bee-escape.

The bees were very active, carrying in pollen and feed, and not being able to get into the parent hive naturally went into the other, and finding brood, proceeded to start a queen-cell.

I assumed that the drone-layer, like a laying queen, would remain on the combs, at any rate until the bees were about all gone, which proved to be the case. The next thing was to pick out half a dozen drones, put them in with the bees in the new hive, then a little formaldehyde finished the drone-layer and drones.

DR. BONNEY.

Beekeepers' Chautauqua is First of Its Kind

The beekeepers' chautauqua is a new departure in the way of summer celebrations. But that is the plan of the Wisconsin Beekeepers' Association for August 25-30 this year. The chautauqua will be held on the old Lake Monona assembly grounds at Madison, announces H. F. Wilson, secretary of the beekeepers' organization.

Although the social side of the meeting will be emphasized, the plans include a series of lectures by men well known in the beekeeping world. The speakers who have already agreed to talk to the Wisconsin fraternity are E. F. Phillips, in charge of beekeeping work for the U. S. Department of Agriculture, and G. S. Demuth, his assistant.

New York Meet at Newark, N. Y.

The program of the State meeting is not yet ready, but the following people expect to be with us at Newark August 1:

E. R. Root, L. C. Dadant, Dr. Phillips and Kenneth Hawkins, all very prominent men in the beekeeping world.

Special attention is going to be given to the problem of creating a demand for honey. Come and prepare to give this problem your best support. Everyone is welcome. Basket lunch at noon.

Program with directions of how to reach our place will be mailed on request, either by Deroy Taylor, O. L. Hershiser, Kenmore, N. Y., or J. H. Cunningham, 303 University Place, Syracuse, N. Y.

There will be several demonstrations there on that day that will be bound to interest you. Come and bring your friends.

J. H. CUNNINGHAM, Secy.

BEE-KEEPING FOR WOMEN

Conducted by MISS EMMA M. WILSON, Marengo, Ill.

Giving a Queen

After the first swarm has issued, can you give the parent colony a laying queen successfully? If so, what method would you recommend to introduce her?

Washington.

Answer.—When the first swarm issues the old queen goes with it, leaving a number of queen-cells. If you wait a week or more (but not waiting till the first virgin emerges from her cell), and then kill all the queen-cells, there will be left nothing from which a queen can be reared, and that will have a tendency to make the bees ready to accept a queen. But there are other things to be considered. When the swarm issued, a large part of them were old bees, leaving mostly young bees in the old hive. If you wait a week before introducing, the bees will be a week older, and hence a larger proportion of older bees, and it is the older bees that raise the mischief when a new queen is introduced. Besides that, waiting a week before introducing the queen will be the loss of a week in the rearing of brood, which may be a matter of considerable importance.

So, taking all into consideration, it is better to proceed as soon as convenient after the prime swarm has issued to introduce the new queen. Destroy all queen-cells, whether sealed or unsealed, even those containing only eggs. If you have bought a new queen for introduction, directions as to how to proceed will no doubt accompany her, which directions you will do well to follow.

It may be, however, that you have reared a queen in a nucleus, and want to use her for introduction. Use one of the introducing-cages that are in common use. Use a long, slender nail to pin the cage on the comb, putting it in the central part of the hive, surrounded by brood, where there is no danger that the queen will be deserted by the bees and chilled.

The cage is provisioned with queen candy, and the construction of the cage is such that it will take a day—perhaps two or three days—for the bees to eat away the cardboard that covers the candy, then eat the candy and release the queen.

If you haven't a regular introducing cage, you can make a cage that will answer. What are called "one-cent cages," because the material costs only a cent, are thus described in Dr. Miller's book, "Fifty Years Among the Bees":

"I take a pine block, 5x1x⅛ in., and wrap around it a piece of wire-cloth 4 inches square. The wire-cloth is allowed to project at one end of the block a half inch. The four sides of this projecting end are bent down upon the end of the stick and hammered down tight into place. A piece of fine wire about 10 inches long is wrapped around the wire-cloth, about an inch from the open end, which will be about the middle of the stick, and the ends of the wire are twisted together. I then pull out the block, trim off the corners of the end a little, so that it will easily enter the cage, slide the stick in and out of the cage a number of times, so that it

will work easily, and the thing is complete. When not in use, the block is pushed clear in, so as to preserve the shape of the cage. As the bees cannot release the queen in a cage of this kind, it will be necessary for you to release her yourself at the end of perhaps three days.

If the queen to be introduced is from a nucleus in your own yard, you may like still better, instead of putting the queen in a cage, to put the nucleus, queen and all, into the queenless colony.

Selecting a Breeding Queen

She who would make a real success with her bees will do well to take for her own the slogan, "Breed from the best." Even if but a little be done in that direction, the results may be quite important. If only one colony in twenty be very poor, replacing the queen of that one colony with a queen reared from the best will make more difference in succeeding crops than might be supposed. If it should double the harvest of that one colony the effort would seem well worth while; but it may make still more difference in another direction, for the drone descendants of that poor queen may cause a slump in the yield of more than one colony a year or two later.

If you do nothing more than to replace a few of your poorest queens with others of best parentage, it is time to begin now to take steps toward deciding which is your best queen, as also the second best, third best, and so on. For if you should decide as to which is best, paying no regard to the others, the bees might take it into their heads to supersede that best queen this fall, and then you are out. Please keep in mind that you are keeping tab on your queens this year so as to know what to do next year.

Several things are to be considered in deciding what you will choose for a breeder A queen with very cross bees would be disqualified. So would a queen whose workers are not three-banded, if you are working for Italian stock. For a comb-honey producer, a queen whose workers should have sections with watery cappings would not do. Likely you would make a difference as to whether a queen was much or little given to swarming.

However it may be about other items, one thing you must keep track of, and that is the the amount of honey stored by each colony. There must be no guess work about it; each time you take a section or extracting-frame, you must put it down in black and white. One way is to have in your record book one or two vacant lines above the record of each colony, putting there the number of sections or pounds taken.

It is easy to give credit for the number of sections taken. To keep tally for extracted honey is not so easy. One way is to credit a certain number of units for each frame fully filled. You might use any number most convenient for that purpose, say eight. Then you would credit 8 for a full frame, 4 for one half filled, 6 for one three-fourths full, and so on. Perhaps you may devise some method you may like better; only have some way so that you will know how any colony compares with any other in the matter of storing.

If each colony is left to its own devices throughout the season, then these figures are conclusive; a colony having 100 credits is a better storer than one with 90 credits, and that's all there is to it. But if you have practiced equalizing colonies early in the season, taking brood and bees from one colony and giving to another, then the case is different; the one credited with 90 pounds may be a better storer than the 100-pound one. The 90-pound colony may have had taken from it 2, 3 or more frames of brood with adhering bees, thereby bringing down its storing ability, and for this the queen should not be blamed. The 100-pound colony may have had brood given it, increasing its storing capacity, and for this the queen should not have credit.

So these are the two things you must keep track of carefully, the amount of surplus stored by each colony, and also the number of frames of brood and bees taken or given. Then after the season is all over, perhaps some time next winter, you will be ready to make out the comparative standing of each colony, a matter which may be left for future consideration.

QUEENS

By return mail. A choice lot of untested queens for July delivery, bred and selected from the best stock that can be had; single, $1.25; doz., $10.

A. B. MARCHANT
DOCTORTOWN, GA.

CLASSIFIED DEPARTMENT.

Advertisements in this department will be inserted at 15 cents per line, with no discounts of any kind. Notices here cannot be less than two lines. If wanted in this department, you must say so when ordering.

BEES AND QUEENS

ITALIAN QUEENS AND NUCLEI—
Untested queens, $1; tested, $1.50; select tested, $2.50.
1-Frame Nucleus, $2.25; 2-frame, $4.00.
1-lb. package of bees, extra, $2.25; 2-lb. package, $4.00.
A trial order will convince you of their merits. H. A. McCarley, Mathis, Tex.

THE AMERICAN BEE JOURNAL is prepared to furnish printing for beekeepers. High quality, prompt service and satisfaction. Our shop is in charge of a man who specializes in printing for the honey producer. Send for our catalog of honey labels, stationery, etc.
American Bee Journal, Hamilton, Ill.

WANTED—A few Carniolan queens.
John Kneser, R 1, Hales Corners, Wis.

FOR SALE—Golden Italian queens, untested, $1 each; tested, $2.
J F. Michael, Winchester, Ind.

FOR SALE—Fine Italian queens, untested, $1 for one; $5.50 for six; tested, $2 for one; $9 for six; tested by return mail, untested ready June 1 to June 10.
R. B. Grout, Jamaica, Vt.

FOR SALE—Leather colored Italian queens, tested, June 1, $1.50; untested, $1.25; $13 a dozen. A. W. Yates,
15 Chapman St., Hartford, Conn.

100 COLONIES in 8-frame hives with one super each, for sale, or would work on halves with good man. Location fine.
Mrs. T. H. Carruth, Big Bend, La.

ITALIAN QUEENS—Northern-bred, three-banded, highest grade, select, untested, guaranteed. Queen and drone mothers are chosen from colonies noted for honey production, hardiness, prolificness, gentleness and perfect markings. Price, one, $1; twelve, $11; fifty, $45. Send for circular.
J H. Haughey, Berrien Springs, Mich.

FOR SALE—Hardy Italian queens, 1, $1; 10, $8. W. G. Lauver, Middletown, Pa., R. 3.

FOR SALE—Goldens, untested, 1, $1.25; 6, $6.50; 12, $11.50. S. A. Tyler, Emden, Ill.

THREE-BANDED ITALIANS ONLY — Untested queens, 1, $1.25; 6, $6.50; 12, $11.50; 50, $40; 100, $75. H. G. Dunn,
The Willows, San Jose, Calif.

GOLDENS that are true to name. Untested queens, 1, $1.25; 6, $6.50; 12, $11.50; 50, $40; 100, $75. Garden City Apiaries,
San Jose, Calif.

FOR SALE—Bright Italian queens, $1 each; $10 per doz. Ready April 1. Safe arrival guaranteed.
T. J. Talley, R. 4, Greenville, Ala.

Head your colonies with Simmons' Famous Italian Queens. They took first premium at New York State Fair last September. Goldens or three-bands: 1, $1.50; 6, $7.50; 25, $30. Orders booked now and filled in rotation. Also nucleus from same stock ready for June delivery. Allen R Simmons,
Fairmount Apiary, Claverack, N. Y.

J. B. BROCKWELL'S Golden Queens, untested, May, June and July, $2 each; six, $7.50; doz., $14; tested, $4 each. Breeders, $5 to $20 each; 3-f. nuclei with tested queen, $9.
Barnetts, Va.

FOR SALE—3-band Italian queens ready June 1. Untested, each $1; twelve, $10; 100, $80. No disease here and satisfaction guaranteed. A. E. Crandall & Son,
Berlin, Conn.

LEATHER and all dark colored Italian queens, when we have them, mated, $1 each. These queens will include all that are not up to the standard in our goldens, but will be good utility stock. C. W Phelps & Son,
No. 3 Wilcox St. Binghamton, N. Y.

SWARTS GOLDEN QUEENS produce golden bees of the highest quality; satisfaction guaranteed. Mated, $1, 6 for $5; tested, $2.
D L Swarts, Lancaster, O., Rt. 2.

FOR SALE—3-band Italian queens from best honey-gathering strains obtainable. Untested queens, $1.25 each; 6, $6.50; 12, $11. Satisfaction guaranteed. W. T. Perdue,
Route No. 1, Fort Deposit, Ala.

OUR BRIGHT ITALIAN QUEENS will be ready for shipment after April 15. Untested, 75c each; half doz., $4.50, or $8 per doz. Select untested, 90c each; half doz., $5.50, or $10 per doz. Tested, $1.50 each. Safe arrival guaranteed.
Tillery Bros., R. 5, Box 1D, Georgiana, Ala.

FOR SALE—One of the best queen breeders in the United States is now raising queens for us from selected stock of leather-colored Italians. We offer warranted queens at $1 each, or $90 per hundred. Tested queens $2 each. Satisfaction and safe delivery guaranteed. Queens ready now for immediate delivery. Order now, as our supply is limited.
The Foster Honey & Mercantile Co.,
Boulder, Colo.

FOR SALE—Pure 3-banded Italian queens, as good as you can buy with money, from June 1 to September 1.
J. F. Diemer, Liberty, Mo.

BEES AND QUEENS from my New Jersey apiary. J. H. M. Cook,
1Atf 84 Cortland St., New York City.

PHELPS' GOLDEN ITALIAN QUEENS combine the qualities you desire. They are great honey gatherers, beautiful and gentle. Virgin, $1; mated, $2. C. W. Phelps & Son,
3 Wilcox St., Binghamton, N. Y.

FOR SALE—Three-banded Italian queens; untested queen $1, six, $5.50; twelve, $10. Tested queens $2 each.
Robert B. Spicer, Wharton, N. J.

FOR SALE—Nine 10-frame hives of bees, wired full sheets foundation, $8 each; 25 new hive bodies; almost new 2-frame Cowan extractor. Make me an offer. M. E. B.,
5729 Eichelberger St., St. Louis, Mo.

TEXAS BRED QUEENS—As our bee shipping season is practically over by the first of June, we will have some extra queens to offer at the following reduced prices: Untested, 1, $1.25; 6, $6.50; 12, $11.50; 50, $40. Select untested, 1, $1.50; 6, $7.50; 12, $13.50; 50, $48. Tested, 1, $2; 6, $10.50; 12, 18.50. Select tested, 1, $2.75; 6, $15; 12, $27.

One-pound package of bees, $2.40; 25 or more, $2.16 each. Two-pound package of bees, $4.25, 25 or more, $3.83 each. Three-pound package of bees $6.25, 25 or more $5.62 each. One frame regular nuclei with 1 pound extra bees, $4.50 each. Two-frame regular nuclei with 1 pound extra bees, $6 each. One-frame regular nuclei with 2 pounds extra bees, $6 each. Two-frame regular nuclei with no extra bees, $4.50 each. Three-frame regular nuclei with no extra bees, $6 each. All by express f. o. b. here.

Add the price of queen wanted when ordering bees. Circular free giving details.
Nueces County Apiaries, Calallen, Texas.

EDSON APIARIES increased queen rearing facilities will insure the prompt delivery of A1 laying Italian queens, leather colored or golden. Prices reasonable. Address
Edson Apiaries, West Butte, Cal.

ITALIAN QUEENS of "Windmere" for sale; untested $1, tested $2. Nuclei in limited numbers during July and August.
Prof. W. A. Matheny,
Ohio University, Athens, Ohio.

FOR SALE—Extra fine Dr. C. C. Miller queens, untested $1 each, 6 for $5.50, 12 for $10, 100 for $80. With 400 to draw from I will be filling orders by return mail.
Curd Walker, queen breeder,
Jellico, Tenn., Rt. 1, Box 18.

FOR SALE—Michigan bred Italian queens; am now booking orders for August 1 delivery; 3-band only; untested, 1, $1; 12, $10; 100, $80. Tested, $1.75 each,
D. A. Davis, North Detroit, Mich.

FOR SALE—Full colonies of bees in 10-frame hives with metal covers, at $8.
Frank France, Platteville, Wis.

QUEENS—BEES—Three-band Italians; productive, gentle. For July queens, untested, 75c; five, $3.50. Two-frame nuclei and queen, $4.75. Sunset Farm, Asheboro, N. C.

FOR SALE—Italian queens; select just hatched, 50c; untested, $1. Especially safe introduction plan free. Order in advance.
James McKee, Riverside, Calif.

FOR SALE—I am up with my orders and better prepared for shipping prize-winning queens. My queen was awarded first prize at State Beekeeper's Convention held in Little Rock May 31. Untested, $1; tested, $2.
H. P. Gannaway, R 1, Box 208, Ft. Smith, Ark.

FOR SALE—For spring delivery—Colonies of Italian bees, fine strain, with tested queen, in one-story 8-frame single-wall hives, full depth, self-spaced Hoffman frames, nearly all wired, $10 each. A few colonies in 10-frame hives, $12 each; all free from disease; f. o. b. here.
Wilmer Clarke, Earlville, Mad. Co., N. Y.

PURE ITALIAN QUEENS—Doolittle and Moore choice stock, also goldens that are golden. Every queen mated and laying before being caged. Select untested, $1.50 each. Select tested, $2.50. For large lots write for price. Safe arrival and satisfaction I guarantee.
J. E. Wing, 155 Schiele Ave., San Jose, Cal.

I. F. MILLER'S STRAIN Italian Queen Bees for sale. By return mail or your money back. Northern bred, for business, from my best superior breeders; gentle, roll honey in, hardy, winter well, not inclined to swarm; leather color or 3-banded. Queens a specialty; 25 years' breeding experience. Safe arrival and satisfaction guaranteed. Untested, $1; 6, $5.50; 12, $10. Select untested, $1.25; 6, $6.75; 12, $12.
I. F. Miller, Brookville, Pa., R. R. No. 2.

HONEY AND BEESWAX

FOR SALE—4 60-lb cans choice extracted buckwheat honey, 1 60-lb. can clover and buckwheat mixed, 400 sections fine quality buckwheat honey, about 400 sections fine clover and about 200 sections clover and buckwheat mixed in 4¼x1¾ sections. Will sell the whole lot at 19c, or a part of it for 20c, f. o. b. here. Send cash with order.
Wilmer Clarke, Earlville, Mad. Co., N. Y.

WANTED—To buy 100 to 300 colonies of bees with location, preferably in Michigan. Address 1635 South 25th St., Lincoln, Neb.

WE WANT every subscriber of the American Bee Journal to become a subscriber of the Domestic Beekeeper. Listen: A $5(or more) order of beekeepers' supplies at catalog price bought through the Domestic Beekeeper, Northstar, Mich., and a dollar extra for a year's subscription to the Domestic Beekeeper, will entitle you to a dollar rebate. leaving your subscription to the Domestic Beekeeper absolutely free. Could one ask more? This offer will give one an idea of what the Domestic Beekeeper is doing for its subscribers in the way of buying their supplies.

FOR SALE—Michigan's best extracted honey in packages to suit. White clover, raspberry, milkweed, buckwheat.
A. G. Woodman, Grand Rapids, Mich.

WANTED—Comb, extracted honey and beeswax. R. A. Burnett & Co.,
6A12t 173 S. Water St. Chicago, Ill.

WANTED—Shipments of old comb and cappings for rendering. We pay the highest cash and trade prices, charging but 5c a pound for wax rendering. Fred W. Muth Co.,
204 Walnut St., Cincinnati, Ohio.

WANTED—Extracted honey, all kinds and grades, for export purposes. Any quantity. Please send samples and quotations.
M. Betancourt, 59 Pearl St., New York City.

FOR SALE

FOR SALE—200 second-hand 60-lb. honey cans in good condition. John Kneser,
R. 1, Hales Corners, Wis.

FOR SALE—Clover and buckwheat honey in any style container (glass or tin). Let us quote you. The Deroy Taylor Co.,
Newark, N. Y.

FOR SALE—Frame nailing device. You can make very satisfactory and simple device. Send 50c for drawings showing construction and operation for nailing Hoffman frames; use idea for nailing any style of frame.
Clarence Aldrich, Santa Barbara, Calif.

FOR SALE—Cedar or pine dove-tailed hives; also full line of supplies, including Dadant's foundation. Write for catalog.
A. E. Burdick, Sunnyside, Wash

FOR SALE—40,000 pounds of No. 1 extracted clover honey and 35,000 pounds of aster honey; both of extra light color, heavy body and fine flavor, in 60-lb. cans.
W. B. Wallin, Brooksville, Ky.

FOR SALE—25 10-frame hives, never been used, full sheets foundation.
30 lbs. foundation brood and surplus.
15 feeders.
70 10-frame queen excluders.
100 comb supers, 10-frame.
2,500 sections, 4¼x4¼x1⅞.
Five to six hundred extracting supers, with combs; no disease. E. Keister, Clarno, Wis.

FOR SALE—Silver Spangled Hamburg eggs and fine, rare old Paganini violin for sale.
Elias Fox, Union Center, Wis.

FOR SALE—Photos of L. L. Langstroth, inventor of movable-frame hives, size 7x9; price, $1. American Bee Journal,
Hamilton, Ill.

FOR SALE—A limited number of bees and queens for May delivery from either home apiaries or South Carolina; safe delivery guaranteed if shipped by express. Parcels post shipments at buyer's risk. We invite correspondence as to details and price.
The Deroy Taylor Co., Newark, N. Y.

FOR SALE—"Superior" Foundation (Weed process). Quality and service unexcelled.
Superior Honey Co., Ogden, Utah.

SPECIAL SALE—1-story 8-frame dovetailed hives in flat, with telescope ⅝ wood covers, in packages of 5, at $10 per package.
A. G. Woodman Co., Grand Rapids, Mich.

FOR SALE—One hundred and seventy-one 1-frame nuclei shipping cages; twenty-five 10-frame G. B. Lewis beehives; one hundred comb- honey supers; one hundred eight-frame bottom-boards and covers; fifteen pounds of medium brood; fifteen pounds extra thin Dadant foundation; about two hundred Hoffman Brood-frames.
Chester E. Keister, Clarno, Wis.

FOR SALE—50 supers at half price; have more than I need. Mrs. Anna Josephson,
Granville, Ill.

SUPPLIES

ALWAYS the best place to get your supplies is at the same old place of H. S. Duby & Son, St. Anne, Ill. No one can beat us on price. Free price list.

WM. A. RAFAEL, former manager for the A. I Root Company at San Francisco, has established a beekeepers' supply business together with Mr. J. E.. Wing, queen breeder, in the Southern Pacific Building, No. 16 Steuart St., San Francisco. Rafael & Wing.

WANTED

WANTED—Your old combs, cappings or slumgum to render into beeswax by our high steam pressure wax presses.
Dadant & Sons, Hamilton, Ill.

WANTED—July, 1916, June, July and December, 1917, and January and March, 1918 numbers of the American Bee Journal; will pay 10 cents per copy. Please wrap so that the whole Journal is protected.
American Bee Journal, Hamilton, Ill.

WANTED—Your order for "Superior" Foundation. Prompt shipments at right prices.
Superior Honey Co., Ogden, Utah.

WANTED—Second-hand 10-inch foundation machine, 5 cells to the inch; must be in good condition. Write giving full particulars as to date bought, size rolls, general condition and price (lowest) to Isidoro A Baldrich,
P. O. Box 25, Cayey, P. R. W. I.

SITUATIONS

WANTED—Man with some experience to work with bees coming season; state age, experience and wages; we furnish board. The Rocky Mountain Bee Co., Billings, Mont., Box 1319.

MISCELLANEOUS

E. D. TOWNSEND, the present owner of the Domestic Beekeeper, bought beekeepers' supplies for the National Beekeepers' Association for several years. He is now buying for the subscribers of the Domestic Beekeeper at the same low manufacturers' price. Listen now what he has got up his sleeve: Any American Bee Journal subscriber buying $5 worth of supplies through the Domestic Beekeeper at catalog price, and sending along an extra dollar to pay for a year's subscription to the Domestic Beekeeper, will get in return a rebate check of $1, leaving the year's subscription to the Domestic Beekeeper absolutely free to you. Of course, if your order for supplies is larger than $5 you will have a correspondingly larger rebate check on your order. One of our subscribers got a rebate check on his order of supplies last month, March, of $40. It was just like getting money from home to him, as he sent us the same money he would have had to pay if he had bought through the regular dealer in beekeeper supplies. More and more, close buyers of beekeepers' supplies are investigating the buying facilities of the Domestic Beekeeper. A word to the wise should be sufficient to cause you to send your next order for beekeeper supplies to the Domestic Beekeeper, Northstar, Michigan.

ROCKY MOUNTAIN HONEY PRODUCERS

We carry a full line of Honey Containers and Bee Supplies. Two five-gallon Honey Cans in Shipping Cases---Export Cases---$1.55; Domestic Case, $1.45. The Cans quoted have a 3-inch screw cap. Both Cans are strongly made, with heavy partitions.

Buy your new Extracting Outfit of us and save money. We have the most practical Capping Melter for commercial beekeeping.

Let us make you a cash offer on your Wax and Honey Crop.

THE FOSTER HONEY AND MERCANTILE COMPANY
BOULDER, COLORADO

QUEENS QUEENS QUEENS

GOLDEN AND THREE BANDED QUEENS

The demand for our Famous Disease Resisting, Honey Gathering Hustlers is greater than ever before. Untested, 90c; 50 or more, 75c each. Select untested, $1; 50 or more, 90c each. Tested, $1.75; select tested, $2. Virgins, 40c. All Queens by return mail, or soon.

BOOK YOUR ORDER NOW

M. C. BERRY & COMPANY, Hayneville, Ala.

Binding for Beekeepers

We do all kinds of book binding, such as magazines like the "American Bee Journal," or any other publication. Also make any style blank book, either printed or unprinted heading

Send us your order for blank books and let us bind your magazines.

Following are prices of binding magazines:

"American Bee Journal," cloth	$1.50
Half leather	$1.75
"Gleanings in Bee Culture," cloth	$1.25
Half leather	$1.50

We also do all kinds of printing, such as Letterheads, Envelopes, Statements or Billheads, Price Lists, Advertising Booklets. No order too large or too small. We print the "American Bee Journal."

LUTZ & STAHL, Keokuk, Iowa

PAT. JULY 30, 1918

C. O. BRUNO NAILING DEVICE

Made for the Huffman Brood Frames. A combined Nailing, Wiring and Wedge Clamping Device. Has been tried and is guaranteed to do accurate work.

PRICE $7.50

Complete directions for operating are furnished with each device.

Manufactured by C. O. BRUNO
1413 South West Street, Rockford, Illinois

ATTRACTIVE CLOTHES

Do not make the man, but they add greatly to his appearance.

Just so with your honey. It must have quality, but should have a neat package and an attractive label.

We can furnish the label. In many sizes and shapes suitable to fit any container.

Write for our new price list of honey labels and stationery.

American Bee Journal, Hamilton, Ills.

Crop and Market Report

Compiled by M. G. Dadant

For the July market report we asked our correspondents to answer the following four questions:

1. How is the honey crop compared to last year?
2. What honey have you on hand and what is the demand?
3. Have you had any contracts or prices offered for your 1919 crop? If so, what was offered for extracted? For comb?
4. What do you expect to realize for your crop of extracted? For comb?

THE HONEY CROP

Although the reports are far from complete on all sections of the country, the prospects seem to be very favorable for a good crop of clover honey throughout the east and central west. The crop varies very much in different localities.

The clover crop, however, was short in many sections last year, and it would be very hard for it to be so short again this year. The New England States, New York and Pennsylvania, report a very fair crop so far, and Michigan, although hardly up to last year, states they will have a good crop. Parts of Iowa are very dry, and other parts are wet, and are hoping for dry weather to make a good clover flow. The same thing is true in Illinois. Wisconsin is better than expected, as is Minnesota.

The season now is probably ten days late in all this large section of the country, so that there are still good prospects for a white clover flow.

In the southeast, Georgia and Florida especially, the prospects and honey flow have been very good, probably a little better than last year.

Along the Missouri Valley the honey crop is coming along well, and is at least equal to last season. Texas has very flattering reports, varying from normal to 800 per cent of what was obtained last season. One or two small localities report a complete failure, but in most instances the crop will be extremely good, following several poor years.

The inter-mountain territory has not yet harvested any honey, but is looking for a normal crop.

In California the crop will be short, only yielding probably 75 per cent. Orange flow was good, but the sage crop is extremely short, and the total crop for California, although over 50 per cent, will be hardly 75 per cent of normal.

DEMAND FOR HONEY

The demand is unusually weak in the local market this month. Of course this is natural, for the warm season and nothing else should be expected. One or two localities state that they are entirely cleaned up on honey and that there is a good demand from outside.

CONTRACT PRICES OFFERED

There have been very few offers on honey for this year by the big buyers. One or two reporters stated that they had been offered a very low price, but refused to take it. Two or three others were offered 15 to 17c for white extracted, but were not willing to close at that figure.

A few reports come from California of sales at very reasonable prices to the beekeeper. A two-ton crop of orange honey sold for 20c a pound and a twelve-ton crop of sage at 19½c.

PRICES EXPECTED

Practically in all instances the beekeepers are expecting a good stiff price for honey this year, and they should. Prices of other products have not dropped materially, and honey, unless it is extremely inflated at present, should not drop very low. Most of the reporters desire a price of about 20c for white extracted honey, although some state they expect to be offered only as high as 12 and 15c, with the price of $4.50 to $5 per case for comb honey. The highest price expected by any producer for comb honey was $6 per case f. o. b. shipping point. This is hardly commensurate with a higher price for extracted honey, and give the comb-honey producers the profit they should have.

One thing striking the writer is the absence of reports on comb honey; it would appear as if very little was being raised. If this be the case, there will certainly be a great demand for it, and it should command the highest prices.

CO-OPERATIVE EXCHANGES

It is too early yet for the Colorado Honey Producers to make offers on honey, as their crop is not yet harvested, and they have no chance to sell. The Texas Association is offering its members on a basis of 16c for extracted honey, and 18c for bulk comb. Most of the beekeepers are satisfied with this price, although a few are holding off expecting higher prices, and several have stated that they are going to sell their honey locally at a better figure.

The California Exchange has quoted prices in car lots as follows: Orange blossom 18c, white and water white sage 17c, light amber mountain honey 14c, white amber alfalfa 11c. These prices are guaranteed against any decline on the part of the association up until September 1, 1919. This would signify that the prices as above mentioned are expected to be the very lowest, and that likely the Association will want to raise this price before the season is over. It is to be remembered that the crop out there is light, and since a large part of the honey which finds its way into the big markets comes from California, the action of this Association is not without a great deal of effect.

The Association has appointed three large commission firms to act as its agents in assisting it to market the crop.

THE GOVERNMENT REPORTS ON HONEY

The monthly report of the Bureau of Markets for May 31, 1919, which is the latest we have, contains very much information on the movement of honey, and upon the prices obtained in the different markets. We urge upon our subscribers, wherever at all interested, to get in touch with the Bureau of Markets at Washington, D. C., and ask to be placed upon the mailing list to get the semi-monthly reports of honey arrivals and prices.

This report for May 31 contained, also, some very interesting information upon the kind of containers in which honey is shipped, and the condition in which it arrives upon the big markets.

Taking New York movement and prices as a criterion, it would seem that the honey price is going to hold up very well. New York markets show that western honey is selling at from 15c to 17c per pound, with a few sales at 20c. Porto Rican and Cuban honey is selling at from $1.25 to $1.50 per gallon, and white clover honey at 17c to 20c. This is, of course, for the old crop.

EXPORT OF HONEY

The amount of honey exported from April 1 to April 20, which are the latest dates available, amounted to 591-000 pounds. Totals since last July 1 amount to 8,900,000 pounds. Again it would seem that the price of our honey depends considerably on the amount that is exported. With the coming of peace, the market could be brought to a point which will allow of considerable more export during the coming year than during the past one.

SUMMARY

Taken all in all, the beekeeper should not be discouraged with the price of honey which he is to expect during the coming year. Of course, as stated in our last issue, the final conclusion will depend upon the beekeeper himself as to the price that he will obtain. We do not look for white honey to sell much below 15c per pound, nor do we think that it will reach a price of over 20c. It is possible that prices may be considerably lower than this, although we hardly expect it. It is true that big buyers are not now out after large quantities but likely they are cleaning up all old stock in preparation for the new.

TENNESSEE-BRED QUEENS

Forty-Seven Years' Experience in Queen-Rearing

Breed Three-Band Italians Only

	Nov. 1 to June 1			June 1 to July 1			July 1 to Nov. 1		
	1	6	12	1	6	12	1	6	12
Untested	$2.00	$ 8.50	$15.00	$1.50	$ 7.50	$13.50	$1.25	$ 6.50	$11.50
Select Untested	2.25	9.50	18.00	1.75	9.00	16.00	1.50	7.50	13.50
Tested	3.00	16.50	30.00	2.50	13.00	22.00	2.00	10.50	18.50
Select Tested	3.50	19.50	35.00	3.00	16.50	30.00	2.75	15.00	27.00

Capacity of yard, 5,000 queens a year.
Select queen, tested for breeding, $5.
The very best queen, tested for breeding, $10.

Queens for export will be carefully packed in long distance cages, but safe arrival is not guaranteed. I sell no nuclei, or bees by the pound.

JOHN M. DAVIS, Spring Hill, Tenn.

EXPERIENCE COUNTS

An experienced beekeeper in Iowa writes:

"I must say it is a pleasure to use Lewis Beeware. Have used some that was cheaper, but the difference in quality vastly more than compensates for the difference in price."

A word to the wise—USE LEWIS BEEWARE. Write today. Dept. B

WESTERN HONEY PRODUCERS
1929-1931 FOURTH STREET
SIOUX CITY, IOWA

BEE SUPPLIES

We carry a complete stock of supplies at all times, and can make prompt shipments Our prices will interest you.

A trial order will convince you that our prices and goods are right.

Send Us Your Inquiries

A. H. RUSCH & SON CO.
REEDSVILLE, WIS.

BEES

We furnish full colonies of Italian bees in double-walled hives, single-walled hives and shipping boxes. Three-frame nucleus colonies and bees by the pound. Tested Italian queens, $2; untested, $1.50. Price list free

I. J. STRINGHAM, Glen Cove, N. Y.
NASSAU, CO.

Write for Price List and Booklet descriptive of

HIGH-GRADE Italian Queens

JAY SMITH
Route 3
Vincennes, Ind.

Archdekin's Fine Italian Queens and Pound Packages

Untested queens, 75c each, 6 for $4.25; doz., $8. Select tested, $1.25. Safe arrival of queens guaranteed.

Package bees, without queens, $1.75 per lb Packages, with queen, 1 lb. and queen, $2.50; 2-lb. and queen, $3.75; 3-lb. and queen, $4.75.

My package is best and lightest in use. Saves bees and express. In case of loss in transit, I will replace loss or recover from express company upon proper presentation of loss by customer. I fully protect my customers from loss.

J. F. ARCHDEKIN,
Big Bend, La.

Golden Queens

After April 1, untested $1.25 each, 6 for $7, or $13 per doz. or 50 for $48. Also untested 3-band at same price; tested, $3 each, and my very best $5 each. Satisfaction.

R. O. COX
Route 4, Greenville, Alabama

Don't stop advertising.
because honey is high. Make it more in demand, so the price will stay where it is. Little stickers on your letters, papers, etc., will help. Printed as below in bright red.

EAT HONEY
NATURE'S OWN SWEET · AIDS DIGESTION

Price of 1,000 gummed, 85c.
American Bee Journal Hamilton, Illinois

WESTERN BEEKEEPERS!

We handle the finest line of bee supplies. Send for our 68-page catalog. Our prices will interest you.

The Colorado Honey-Producers' Association
1424 Market Street, Denver, Colo.

Established 1885

We are still furnishing beehives made of white pine; they will last. A. I. Root Co.'s make of bee supplies kept in stock. Send for catalog giving full particulars; free for the asking. Beeswax in exchange for supplies, or cash.

JOHN NEBEL & SON SUPPLY CO.
High Hill, Montg. Co., Mo.

In making up rush orders we are able to make immediate deliveries by Parcel Post and Express of the following goods:

Friction Top Pails, 3, 5 and 10 lb. sizes.
5 Gal. Cans. All sizes and weights of Dadant's Foundation.
Comb and Extracted Honey, supers with and without inside fixtures.
One and two story Lewis Beehives, in flat, nailed and painted.
Most sizes of Root's Extractors.
Bingham Smokers and Honey Knives (including steam heated).
Lewis Sections, all Standard sizes.
Wire, Nails, Staples, etc.
Queen Excluders, all styles.
All lines of supplies you are likely to need in a hurry.

THE DEROY TAYLOR CO., Newark, Wayne Co., New York

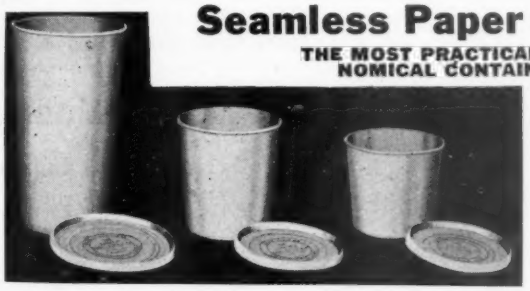
We also promised the program of the State Meeting would be printed in this space this month. However, said program is not yet ready. The following people expect to be with us:

E. R. Root, L. C. Dadant, Dr. Phillips and Kenneth Hawkins, all very prominent men in the beekeeping world.

Special attention is going to be given to the problem of creating a demand for honey. Come and prepare to give this problem your best support. Everyone is welcome. Basket lunch at noon.

Program with directions of how to reach our place will be mailed on request, either by us, O. L. Hershiser, Kenmore, N. Y., or J. H. Cunningham, 303 University Place, Syracuse, N. Y.

There will be several demonstrations here on that day that will be bound to interest you. Come and bring your friends.



Seamless Paper Containers

THE MOST PRACTICAL AND ECONOMICAL CONTAINER FOR

Honey

Superior to any other single service container manufactured

Write for particulars and prices

THE SANITARY PAPER BOTTLE CO. Sandusky, Ohio 415 Water St.

Golden Italian Queens

RUSTBURG, VA., R. No. 3, March 18, 1918.

Mr. Ben G. Davis:

Dear Sir—Please find enclosed $5, for which please send me the very best Golden Queen you can for the money. If you can't ship her at once, please notify me. I ordered one from you 3 years ago last fall that was the best I ever saw. Her bees stored 320 pounds of comb honey the first year. I have several of her daughters that are fine.

Hoping to get a good one again, I am yours truly,

J. W. LAWRENCE.

PRICES OF QUEENS

	Nov. 1st to June 1st			June 1st to July 1st			July 1st to Nov. 1st		
	1	6	12	1	6	12	1	6	12
Untested	$2 00	$8 50	$15 00	$1 50	$7 50	$13 50	$1 25	$6 50	$11 50
Select Untested	2 25	9 50	18 00	1 75	9 00	16 00	1 50	7 50	13 50
Tested	3 00	16 50	30 00	2 50	12 00	22 00	2 00	10 50	18 50
Select Tested	3 50	19 50	35 00	3 00	16 50	30 00	2 75	15 00	27 00

Safe arrival, purity of mating and satisfaction guaranteed

No Nuclei or Bees by Pound

Queens for export will be carefully packed in long distance cages, but safe delivery not guaranteed.

BEN G. DAVIS : : Spring Hill, Tenn.

QUEENS

Quirin's Improved Superior Italian Bees and Queens They are Northern Bred and Hardy. 25 years a Queen-breeder

PRICES	Before July 1st			After July 1st		
	1	6	12	1	6	12
Select unte'ed	$1.50	$ 8.00	$14.00	$1.00	$ 5.50	$10
Tested	2.00	10.00	18.00	1.50	8.00	14
Select tested	2.50	14.00	25.00	2.00	10.00	18

BREEDERS—The cream from our entire stock of outyards, $5 each. Usually we can send all queens promptly after June 10th.

Breeders, select tested and tested queens can be sent out as early as weather will permit.

Send for testimonials. Orders booked now.

Reference—any large supply dealer or any bank having Dun's reference book.

H. G. QUIRIN, Bellevue, O.

BEE SUPPLIES

Let Us Figure With You

Get our discounts before buying Largest stock in South West.

C. C. CLEMONS BEE SUPPLY COMPANY

142 Grand Ave., Kansas City, Mo.

A BOOK FOR BEGINNERS

"First Lessons in Beekeeping," written by the editor of this magazine, is intended primarily for the use of beginners in beekeeping. You should have it. Price, postpaid, $1, or clubbed with the American Bee Journal, one year for $1.75.

American Bee Journal, Hamilton, Ill.

Service and Quality

Bee Supplies **Bee Supplies**

¶ Order your supplies early, so as to have everything ready for the honey flow, and save money by taking advantage of the early order cash discount. Send for our catalog — better still, send us a list of your supplies and we will be pleased to quote you.

C. H. W. Weber & Company

2146 Central Avenue **CINCINNATI, OHIO**

MARSHFIELD GOODS

BEEKEEPERS

We manufacture millions of **sections** every year that are as good as the best. The **cheapest** for the **quality; best** for the price. If you buy them once, you will buy again.

We also manufacture **hives, brood-frames, section holders** and **shipping cases.**

Our Catalog is free for the asking

MARSHFIELD MFG. CO., Marshfield, Wis.

A BIG STOCK OF BEE SUPPLIES

ALL BOXED, ready to ship at once—thousands of Hoffman Frames; also Jumbo and Shallow Frames of all kinds—100 and 200 in a box. Big stock of Sections and fine polished Dovetailed Hives and Supers.

I can give you bargains. Send for a new price list. *I can save you money.*

Will take your Beeswax in Trade at Highest Market Price

CHAS. MONDENG

159 Cedar Lake Road **MINNEAPOLIS, MINN.**

PORTER BEE ESCAPE

SAVES HONEY TIME MONEY

For sale by all dealers.
If no dealer, write factory
R. & E. C. PORTER, MFRS.
Lewistown, Illinois, U. S. A.
(Please mention Am. Bee Journal when writing)

PRODUCE MORE COMB HONEY

USE THE LOTZ ONE-PIECE SECTION

the kind that does not break in folding.

We manufacture millions of sections each year, and therefore can fill your needs at all times.

We also carry a complete line of other Bee Supplies. Send us your inquiries and we will be pleased to quote you our best price.

Our 1919 Catalog free for asking.

AUGUST LOTZ COMPANY
BOYD, WISCONSIN

"QUEENS OF QUALITY"

The genuine "Quality" kind of 3-band Italians—bred strictly for business. Write for circular.

J. IVAN BANKS, Dowelltown, Tenn.

BARNES' Foot-Power Machinery

Read what J. L. Parent, of Chariton, N. Y., says: "We cut with one of your Combined Machines last winter 50 chaff hives with 7-in. cap, 100 honey-racks, 500 frames and a great deal of other work. This winter we have a double amount of hives, etc., to make with this saw. It will do all you say of it." Catalog and price list free.

W. F. & JOHN BARNES
995 Ruby St., ROCKFORD, ILLINOIS

ALWAYS MAKE SURE THAT THIS TRADE-MARK IS STAMPED ON EACH PIECE OF

"*Tidewater*" *Cypress*

"THE WOOD ETERNAL"

THEN YOU BUY SAFETY (AND SATISFACTION) FIRST, LAST AND 'TWEEN TIMES

"ALL-HEART" GRADE FOR BEEKEEPERS' USE

Southern Cypress Manufacturers Association

ADDRESS NEAREST OFFICE

1251 Hibernia Bank Building
NEW ORLEANS, LA.

1251 Heard Nat'l Bank Building
JACKSONVILLE, FLA.

HIVES
FRAMES

MADE RIGHT BEE SUPPLIES
QUALITY SERVICE

SUPERS
SECTIONS

A COMPLETE LINE OF SUPPLIES

THE KRETCHMER MFG. CO., Dept. A, Council Bluffs, Ia.

HONEY, HONEY, HONEY

We shall be in the market for any quantity, both comb and extracted. Mail sample of extracted and state price asked in first letter.

Beeswax always in demand. Cash or in trade.

"GRIGGS SAVES YOU FREIGHT"
TOLEDO

June is here and the big White Honey Flow with it. Don't get short of sections and foundation, the season promises to be good.

Honey Cans and Cases

Order these early, a limited number of second hand cans on hand at 75c per case

GRIGGS BROTHERS CO.

DEPT. 24 **TOLEDO, OHIO**

REVISED EDITION
NOW READY

So great was the demand for copies of the A B C & X Y Z of Bee Culture that the new 1917 edition of 15,000 copies is entirely sold out. A supply of books estimated to last a year were completely exhausted in six months.

THE
NEW EDITION

is greatly revised and contains 896 pages. It contains the very latest and most up-to-date methods, and is the leading authority of the world today on beekeeping.

THE A. I. ROOT CO.
MEDINA, OHIO

NEW YORK PHILADELPHIA CHICAGO
ST. PAUL INDIANAPOLIS NORFOLK
THE A. I. ROOT CO. OF CALIFORNIA
SAN FRANCISCO LOS ANGELES